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ABSTRACT

This curriculum consists of a one-week course of study designed to introduce students in grades 9-12 to (or increase their awareness of) toxic substances commonly found in the home. It includes an introduction/conceptual framework, five lessons, a unit test, and appendices. Each lesson consists of a statement of purpose, objectives, list of equipment and/or materials (with overhead projector masters and ready-to-duplicate student handouts provided), time allocation, activities, teaching procedures, and a form of evaluation capable of measuring the achievement of the objectives. The concepts fostered focus on emergency preparedness and problems with antidotes, labeling of ingredients, adverse health effects, disposal problems, and on advertising techniques and safer substitutes. The appendices include an annotated list of resource materials, a list of state hazardous and solid waste agencies containing additional background information on household toxics and safety precautions, a chart of household products causing indoor air pollution, a resource sheet on chemical hazards in the arts, a list of environmental/health and safety programs, a chart of first aid tips for poisoning, and a question and answer sheet on specific toxic "incidents." The curriculum is appropriate for use in a variety of subject areas, including health and safety, home economics, physical sciences, environmental sciences, and young mothers programs. (JN)

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TOXICS IN MY HOME? YOU BET!

CURRICULUM ON HOUSEHOLD TOXICS FOR GRADES 9-12

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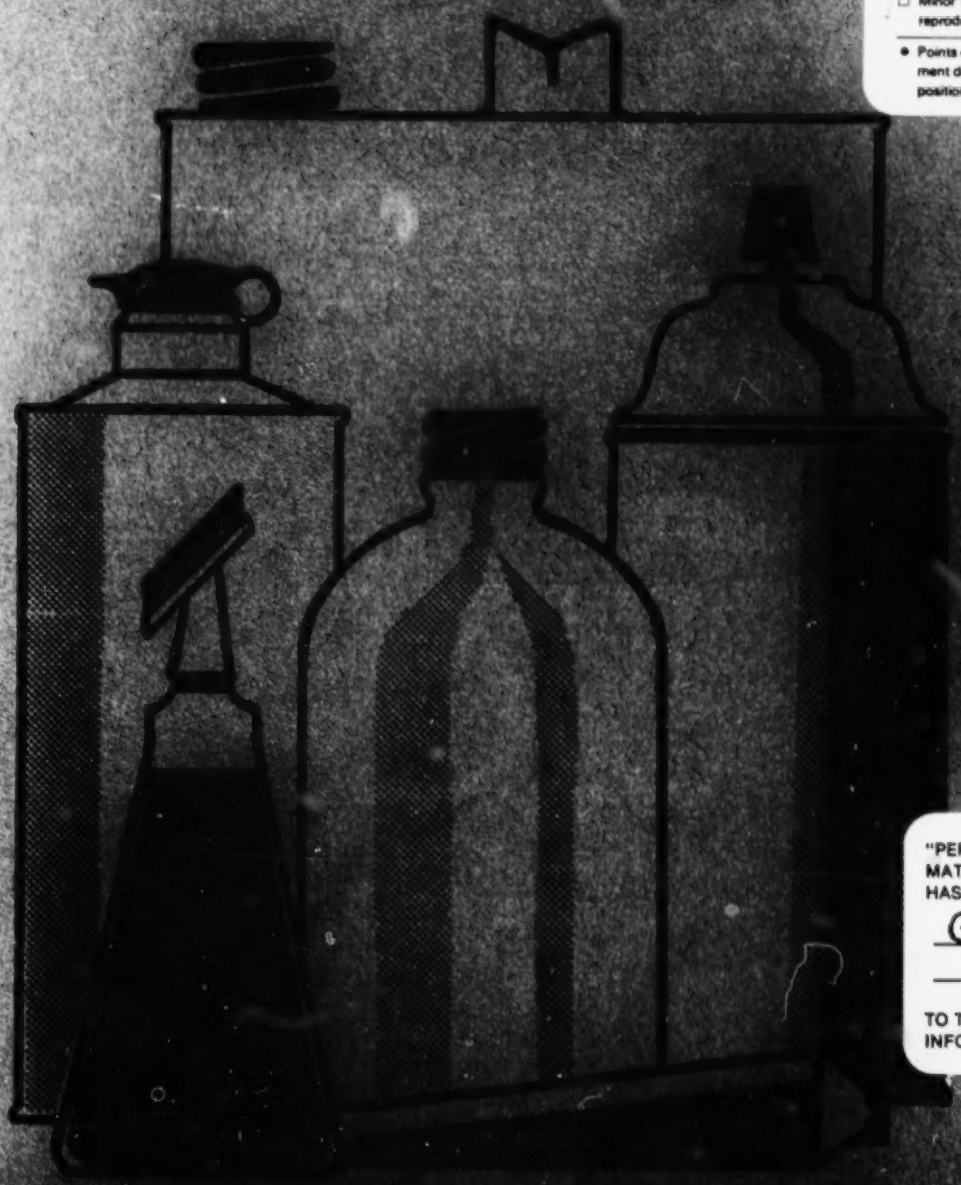

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Dear Teachers:

The enclosed curriculum on chemical hazards in the home addresses a very real problem--one that is responsible for thousands of injuries/illnesses of men, women and children across the country. The problem involves the unsafe use and disposal of household products containing toxic chemicals.

This curriculum is designed to introduce students to (or increase their awareness on) the potential hazards of common products used in the home--products such as pesticides, motor oil, pool acids, oven cleaners, solvents, etc. Designed by Sacramento area educators, the curriculum was piloted in area classrooms in the spring of 1984. Following the pilot project, revisions were made and the curriculum is now available for use in classrooms statewide and nationally.

We hope you will enjoy teaching this unit and educating yourself and your students on the potential hazards of chemicals in the home.

Sincerely,

Gina Purin

Gina Purin
Project Director/Environmental Health Planner

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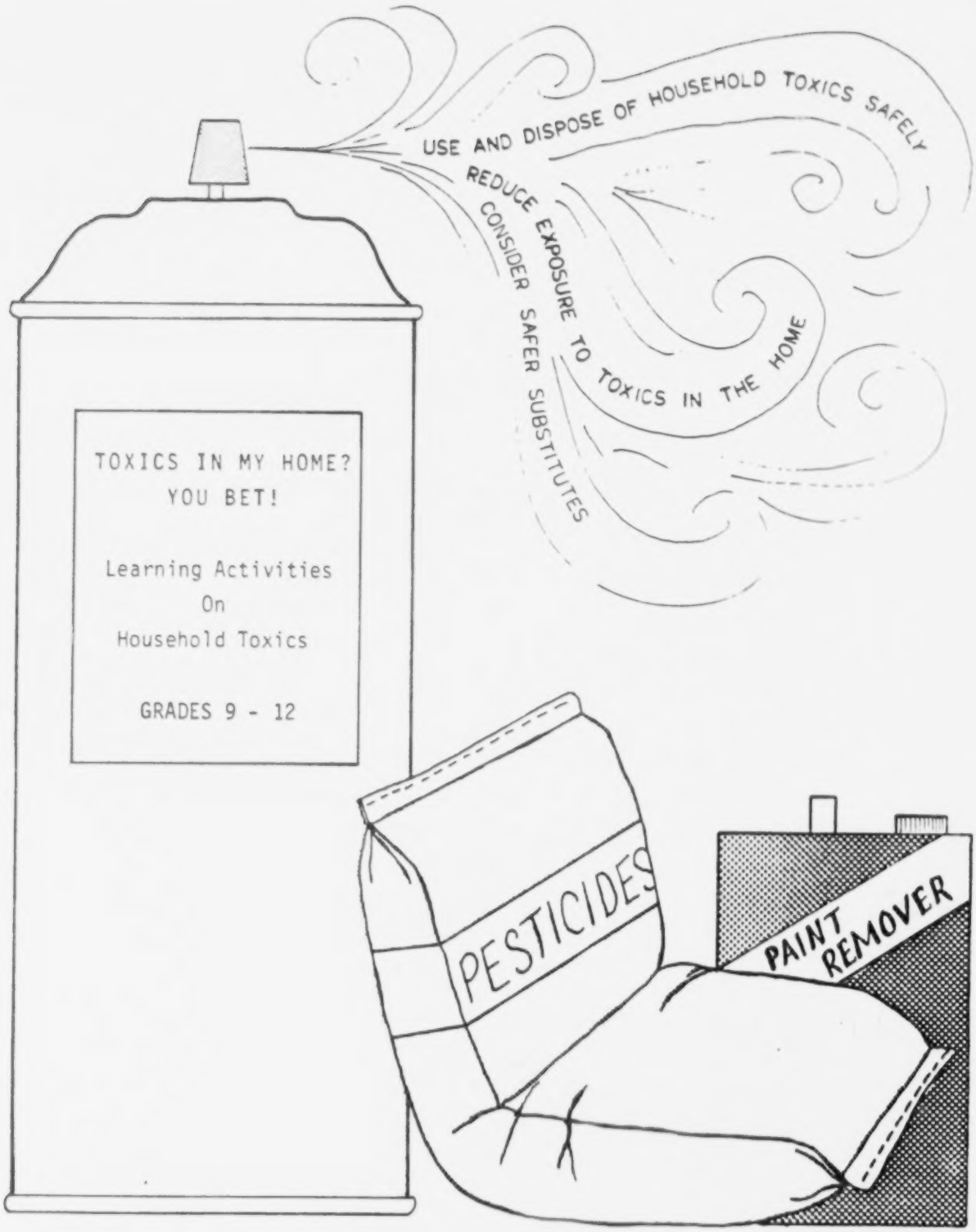

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Cost of the curriculum is $8.50 and includes an attractive personalized binder. Materials, without the binder, may be purchased for $4.50. A postage and handling charge of $3.50 must accompany each curriculum order or $14.00 for a complete set (K-3,4-6,7-8,9-12).

PLEASE NOTE

The following change, regarding waste oil recycling, relates to information provided in the Curricula on those pages listed below.

CURRICULUM LEVEL	PAGE NUMBER
K-3	A-32
4-6	29, A-32
7-8	25, A-32
9-12	51, A-32

CHANGE

As of 1986, AGORO is no longer active. To find out if a waste oil recycling operation exists in your community, contact your city/county department of public works (solid waste division) or the local health department. Also try calling the appropriate state agency that addresses solid or hazardous waste management issues.

CREDITS

The following persons participated in the development of the curriculum on Household Toxics:

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Enclosures:

- Chemical Hazards in the Home (3 brochures)
- Emergency Action for Poisoning
- What California Is Doing to Protect You From Dangerous Chemicals
- What Do I Do Now?

INTRODUCTION/ CONCEPTUAL FRAMEWORK

TOXICS IN MY HOME? YOU BET!

(Household Toxics: Chemical Hazards in the Home)

HISTORY

The twentieth century is marked by the emergence of prevention as a significant focus in the field of health. We are all aware of such preventive programs as those dealing with immunization, drug and alcohol abuse, smoking, sexually-transmitted diseases, and heart disease, to name a few. There is no question that such programs have had a profound impact on our nation's health. In recent years, we have witnessed a marked increase in our awareness of environmental issues. Such terms as toxic waste, acid rain, emission control standards, hazardous waste, and oil spills are now familiar terms to us all.

More recently, the public has taken an active interest in toxic chemicals found in their home environment. Individuals are concerned with reducing or eliminating exposure to such chemicals. To do so, one must first be aware of what chemicals are present in these products and what adverse health conditions may be associated with these chemicals. This is not an easy task.

For more than thirty years, workers have struggled to receive information on the names and health effects of chemicals they were being exposed to in the work place. They have won this "right" only recently--and only in 14 states: California, Connecticut, Illinois, Massachusetts, Minnesota, New Hampshire, New York, West Virginia, New Jersey, Rhode Island, and Alaska. Maine, Michigan, and Wisconsin are in the process of revising and improving their laws. As of this printing, 18 other states are also considering the adoption of these laws.

Those states are: Arkansas, Delaware, District of Columbia, Florida, Hawaii, Indiana, Iowa, Kentucky, Louisiana, Maryland, Montana, Nebraska, North Dakota, North Carolina, Oregon, Pennsylvania, Texas and Washington.

The state law giving workers the right to know what chemicals they are exposed to and what potential health effects are associated with those chemicals is commonly referred to as the "Worker Right-To-Know" law.

In some areas of the nation, residents have recently become concerned about what chemicals are stored, handled, and disposed in their community. They are equally concerned with the health effects of those chemicals. State and local governments have responded to these community concerns by adopting "Community Right-to-Know" laws. To date, approximately 45 state and local governments have passed such laws giving residents access to information on toxics present in their community. The majority of these laws have been passed in California.

As consumers become more concerned about "rights" to information, there is increasing concern about receiving information on chemicals found in household products. Consumers possess little, if any, information on the potential long term health effects associated with chemicals found in "everyday" home and garden products. To encourage safe use and safe disposal practices, consumers need to be aware of the potential dangers (both immediate and long-term) associated with the products they buy and use. If consumers possessed such information, it would also allow them to make more informed decisions with respect to product selection.

Recognizing that informed students become more knowledgeable consumers, and, that students can influence the habits of parents/guardians, this curriculum was designed to identify some common home and garden toxics, discuss methods for reducing exposure to potential toxics found in the home, and encourage safe use/disposal of such products.

The curriculum is consistent with recommendations found in the publication, Promoting Health/Preventing Disease: Objectives for the Nation, published by the U.S. Department of Health and Human Services (1980). The document promotes mandatory classroom education on the control of environmental hazards, in both elementary and secondary schools.

PROGRAM

The curriculum consists of a one-week course of study designed to educate students about toxic substances commonly found in the home. Similar curriculum was also written for grades K-3, 4-6, and 7-8. Sacramento area educators designed and developed the materials by modifying existing materials and by creating their own materials. Each grade level includes a specific format for the lessons and a conceptual framework around which the lessons are designed. Each lesson consists of a statement of purpose (goal statement), objectives, materials/equipment list, time allocation, teaching procedures, and a form of evaluation capable of measuring the achievement of the objectives. The lessons can be easily implemented. Since they were designed independent of each other, teachers may use one or more lesson plans and still be assured of delivering clear and easy-to-understand information. The curriculum is appropriate for use in a variety of subject areas that include health and safety, home economics, physical sciences, environmental sciences, and young mothers programs.

	KNOWLEDGE	SKILL	COMMITMENT
CONCEPT I: Products containing toxic chemicals are routinely used in activities of daily living. (Learning Acitivities I and II)	All potentially toxic products do not contain a complete listing of their ingredients. Also, some products display outdated antidote information.	Recognize that some potentially toxic products do not list the ingredients. Recognize that some chemicals have several names. Know what to do in an emergency involving a chemical poisoning.	Know the telephone number of the poison control center or hospital emergency room. Keep it by the telephone.
CONCEPT II: Unsafe use of household toxics can adversely affect health. (Learning Activity III)	Toxic chemicals can have acute and chronic effects on public health and the environment.	List specific toxics found in common household products and give their health effects. Distinguish between acute and chronic.	Before using household toxics, read the directions for use and follow them carefuly. Be aware of the presence of toxic chemicals.
CONCEPT III: Unsafe disposal of household toxic substances may adversely affect health and the environment. (Learning Activity IV)	Household toxics are difficult to dispose of safely.	Identify alternatives to disposing of toxic substances in the trash or down the drain.	Will consider alternative disposal methods before tossing toxics in the trash, down the drain, on the land or storing them indefinitely.
CONCEPT IV: Safer substitutes are available for common household toxics. (Learning Activity V)	Learning about safer substitutes provides for more informed decision-making when buying household products.	Identify formulas for making less toxic substitutes for household products. Be aware of influential advertisements.	Whenever possible, consider using less toxic or non-toxic products.

In designing the curriculum, every effort was made to keep expenses and teacher preparation time at a minimum.

MATERIALS

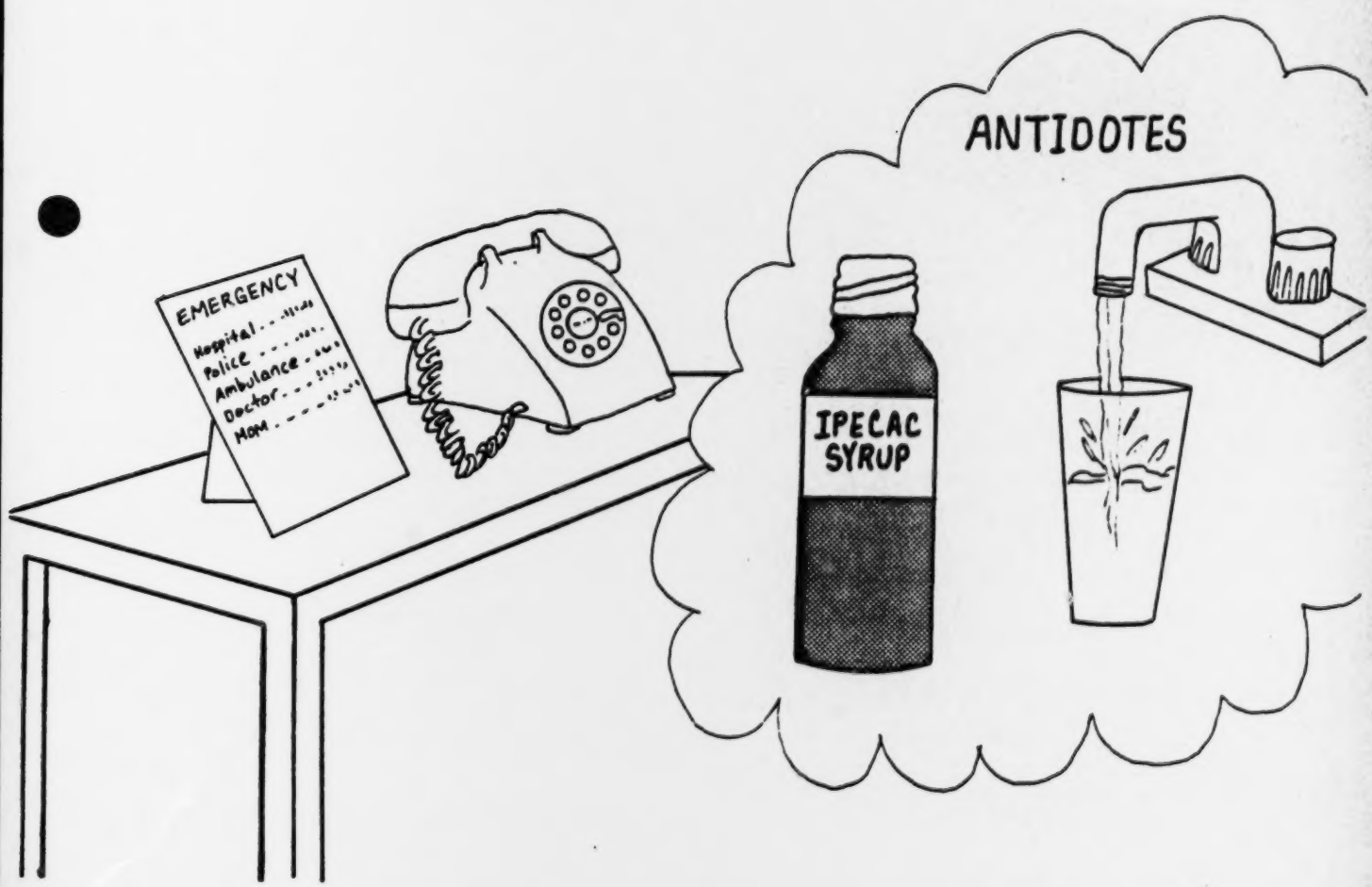
Materials are printed in black on white for ease of reproduction on ditto masters and/or transparencies. For ease in locating materials, dividers are placed between each section of the handbook and each lesson plan.

Following the framework and lesson plans, you will find an extensive appendices section. This section lists various resources on the topic. This section also includes a selection of articles that include information on household toxics, indoor air pollution, chemical hazards in the arts, and environmental/health and safety curriculum.

APPENDICES

Permission is granted to reproduce this curriculum for educational purposes. Golden Empire Health Planning Center would appreciate being informed if you or your school plan on using the reproduction rights. The Planning Center's address and telephone number are: 2100 21st Street, Sacramento, CA 95818, (916)731-5050.

LEARNING ACTIVITY ONE



CONCEPT I

LEARNING ACTIVITY ONE

PURPOSE:

To introduce students to the general topic of toxic chemicals, acquaint them with emergency procedures used in the case of an accidental poisoning, and stress the importance of enlisting medical advice rather than following antidotes on product labels.

OBJECTIVE:

The students will be able to:

1. define and give examples of toxic chemicals;
2. list clues to or symptoms of internal poisoning;
3. demonstrate the correct procedures to be followed in the event of a poisoning; and
4. memorize the telephone number of at least one medical professional or institution that can provide first aid information in an emergency.

MATERIALS:

1. Copies of pages 11-15 (one per student).
2. Tube of partially used airplane glue, or beaker of water labelled "lye".
3. Telephone number of the nearest Poison Control Center or hospital emergency room. Check your telephone directory. You will need this information for the worksheet on pages 14-15.
4. Butcher paper or chalkboard/eraser.

TIME: 50 Minutes.

TEACHING PROCEDURES:

1. Simulate a poisoning in the classroom. (See pages 9-10 or use Option A or Option B listed below and on the following page.)

   OPTION A: Teachers can enlist the support of students from their class or the drama department to role play an emergency situation involving a poisoning such as the one presented on pages 9-10.

OPTION B: Using information presented on page 10, describe a poison scenario. Include the behavior/actions of a poison victim. (As an alternative, you may describe the behavior/actions of a poison victim that you may have actually experienced.) After describing the behavior/actions of a victim in a possible poison scenario, (such as the one on page 10) have the class write down all the possible responses (both appropriate and inappropriate) that could have occurred if the situation actually happened in the classroom. (EXAMPLES: someone runs for the school nurse; students ignore the situation hoping someone else would do something, etc.) Give time for students to answer the question. When time is up, discuss the responses. To facilitate a discussion, teachers can adapt the questions provided in step 2 for use in this lesson; then, proceed with step 3.

2. Discuss the dramatization.

   On the blackboard or (preferably) large sheets of butcher paper, make several lists of student responses to the following questions. Don't put words in the students' mouths; record what is said and do not prompt the students. They will be answering these questions before receiving information on toxics. Later (step 6), you can have students review the questions after they have been given instructions on the subject. The questions are as follows:

   a. What seemed to be the problem? (Example: Student seemed "spaced out", etc.).

   b. What were your (i.e., students') thoughts during the "emergency"?

   c. What were we, as potential helpers, doing?

   d. What should we have done? (As perceived by the students before receiving instruction.)

   e. What information would you like to have had in this emergency? (e.g., cause of symptoms, emergency procedures, antidotes, phone numbers, etc.)

   f. What clues were present to help us decide what happened and/or what needed to be done?

   g. Did anyone think the "victim" may have been poisoned? Why?

3. Orally give pre-test, page 16. Have students write the answers to the pre-test on a piece of notebook paper labelled pre-test. Do not discuss the answers at this time. Tell students to look for the answers as the lesson is presented. Have students keep the pre-test for use in the post-test. (See evaluation, page 8.)

4. Tell students that there are a number of potentially hazardous products that are commonly used in homes. Hand out and discuss Potential Household Toxics, page 11. Ask if students can name others. Tell students you will be discussing some hazards associated with these chemicals in a later lesson.

5. Allow 20 minutes to hand out and discuss "Definition, Potential Harm, Symptoms and Antidote Fact Sheet" (pages 12-13) and "Emergency Procedure" sheets, pages 14-15. (You may want to call your Regional Poison Control Center for additional information to give to the students). Have students record the phone numbers for the Poison Control Center (if there is one in your area) and hospital emergency room. You will need to look up the numbers prior to class and give them to the students; or, the students can find the numbers as a homework assignment. Also, have them complete the "key word" statements on the Emergency Procedure Sheet.

   Answers are:

   REMOVE poison from contact with victim.

   CALL a medical professional for advice (e.g., Poison Control Center, doctor etc.)

   DON'T RELY on antidote information provided on the product label.

   BRING vomitus (if any) and poison container to hospital (if victim must go to the emergency room).

   USE syrup of ipecac only on the advice of a medical professional.

6. When time is up, ask students to answer the questions generated in step 2, based on the information they now possess. Their answers should reflect a more knowledgeable and accurate response.

EVALUATION:

Read the pre-test questions out loud. This time, students should write the answers on a sheet of paper labelled "Post-Test". Now give the answers to the questions, letting the students grade their papers (pre-test and post-test). By a show of hands, ask how many students increased their score as a result of the lesson. How many students got a perfect score on the post-test?

Grading of the students can be accomplished by a post-test given at the end of the entire unit on toxic chemicals. See pages 75-77.

SIMULATED POISONING

Introduce the "toxic chemical" unit with an "emergency." Select a student several days prior to the beginning of the unit to be the "victim" of an accidental poisoning. It is important that his/her part is rehearsed and that the students do not know that the next unit in your class is to deal with "toxic chemicals."

Have some "evidence" (e.g., labelled or unlabelled bottle of a solution or other substance near the student; an odor on the clothing) which might give a clue as to the nature of the poisoning.

Since the "emergency" involves the students in the class, it is important that the students do not perceive this as "acting." The instructor should be either disoriented or momentarily absent so that he/she is of no help to the students in the class. The "acting" should stop in a short time or whenever students begin to go for help (the school nurse and administration should be advised that students might call for help). The instructor should then bring the class back to order and discuss what happened (see step 2 of teaching procedures.)

Although any toxic chemical might be used for the fake poisoning, two examples are given below. The glue will be used as an example in this lesson plan.

Product	Airplane Glue	Product	Drain Cleaning Compound
Contains	Toluol (Toluene) Hexane	Contains	Sodium hydroxide (lye)
How Exposed	Inhalation	How Exposed	Ingestion
Possible Symptoms	Headache, Nausea, Drowsiness, Dizziness, Unconsciousness, Change in skin color	Possible Symptoms	Burns or redness on mouth and/or hands, Burning throat, Nausea
Precaution	Be sure that the fake victim does not become a real victim by accidentally inhaling the fumes from the glue.	Precaution	Have water in a bottle labelled sodium hydroxide.

POSSIBLE POISONING SCENARIO:

a. Instructor is taking roll.

b. "Victim" takes container of glue out of pocket so that it might be seen by another class member but not the teacher.

c. "Victim" pretends to uncap the container and sniff it. Student should hold his/her hands around the glue as it is being "sniffed". The "victim" might also try to subtley attract the attention of a classmate. The "victim" should appear very concerned about not getting caught by the teacher.

d. The "victim" pretends to screw the cap back on and then places the tube in his/her pocket or in the desk.

e. Seconds later, the "victim" acts disoriented and mumbles that his/her head hurts.

f. Victim's head "bobs".

g. Instructor is "unaware" that this is occurring. Instructor leaves classroom. Without being seen, try to observe the class while absent. You may observe something that can be used to facilitate a discussion (step m).

h. Victim's head hits the desk so that nearby students detect that something is wrong.

i. Victim should now be "unconscious with irregular breathing".

j. Allow time for students to react/not react to this "emergency".

k. Instructor returns to the room and either brings the class back to order or continues the scenario to see how the students behave.

l. The instructor should end the "emergency" at his/her discretion and explain what happened.

m. The dramatization can now be discussed.

n. Remember to collect the glue from the student before class ends.

o. It is extremely important that students do not discuss what happened with other students who might be having the same class the next period or the following day. The "surprise" element is important in this lesson.

POTENTIAL HOUSEHOLD TOXICS

Kitchen/Pantry

Bleach
Disinfectants
Furniture Polish and Wax
Shoe Dye and Polish
Oven Cleaners
Laundry Detergents
Ammonia
Drain Cleaners

Bathroom

Air Fresheners
Sleeping Pills
Laxatives
Tranquilizers
Sedatives
Liniments and Salves
Toilet Bowl Cleaners
Bubble Bath

Bedroom

Hair Sprays and Conditioners
Deodorants
Mothballs
Medications
Nail Preparations
Nail Polish Remover

Garage/Workshop

Gasoline
Kerosene
Car Wax
Turpentine
Lighter Fluid
Hobby Supplies
Furniture Stripper
Caulking Compounds
Glues and Adhesives
Aerosol Sprays

Paint
Paint Thinner
Lime
Putty
Garden Sprays
Insect Killers
Weed Killers
Antifreeze
Solvents
Rust Removers

FACT SHEET

Definition: Toxic means poisonous. A poison is something that causes illness, injury or death to any living organism.

Potential Harm: Accidental drinking of, breathing fumes of, or skin and eye contact with potentially toxic products can result in injury, illness, and sometimes death.

Some harmful effects appear immediately. However, other health problems take a long time to develop. The amount of harm a person suffers from exposure to hazardous chemicals depends on: (1) the type of chemicals in the household product; (2) how much of the chemical the person is exposed to; and (3) the physical makeup of the victim.

Often, children and frail people suffer harm from exposure to a smaller amount of a hazardous chemical than do healthy grownups. Each person may respond differently to each chemical.

What chemicals are hazardous? How much is too much? The complete impact any chemical has on a person's health is not known, especially the long term effects. Another concern is the potential adverse health effects resulting from the use of chemicals in combination with each other. One chemical may be associated with a particular hazard; however, that hazard may be increased when the chemical is combined with something else. The effect chemicals produce from acting in combination with each other is referred to as "synergy" (combined action) or synergistic effect. Little is known about the potential problems caused by the synergistic effects of many chemicals.

Symptoms: Symptoms are those signals that an organism exhibits which indicates that the organism is not as it normally is. We are able to tell that an organism is not well by the symptoms it displays.

Symptoms resulting from exposure (ingestion, inhalation, skin absorption) to toxic chemicals include:

dizziness	blurred vision	irregular heartbeats
nausea	headaches	skin irritations
vomiting	sleepiness	allergic reactions
sweating	clumsiness	difficulty in breathing

Symptoms do not always occur immediately. Sometimes they may occur within minutes or hours and other times the effects may not appear for years.

Other evidences of poisoning might be stains or odors (on a person's clothes or skin), changes in behavior, open chemical containers, and/or burns on mouth and hands.

Antidotes: In a random survey of 1,019 household products labels conducted by the New York Poison Control Center, 85% of the labels had inadequate or erroneous first-aid information. Six percent of the labels were wrong, giving first-aid advice that was potentially dangerous to the victim. The survey included cleansers, polishes, waxes, detergents, laundry aids, drain openers, ammonia products, medications, and pesticides.

Medical professionals believe that the use of salt to induce vomiting is a major problem with respect to antidotes. Two tablespoons of salt can do real damage to a child. In one incident, a child swallowed fondue fuel which contains methanol. The mother followed the label's directions and gave salt water to induce vomiting. When the child didn't respond, the mother kept repeating this action. The child died in the hospital six hours later due to a very high sodium (salt) level.

GARDEN
SPRAY
ANTIDOTE: Call a physician immediately. Give a tablespoon of salt in a glass of warm water and repeat until vomit fluid is clear. Have victim lie down and keep warm. Give strong tea or coffee. Give artificial respiration if breathing has stopped.

Another problem is caused by labels that suggest vinegar or citric juices to neutralize alkaline substances such as bleach and tile cleansers. This sets up a heat reaction that can cause worse burns than the original poison.

Companies have been updating labels in recent years but the problem remains that many people are using products as old as five or six years with the incorrect antidote information given.
Instead of relying on antidotes given on product labels, call the Poison Control Center or a medical professional for advice and first aid information.

EMERGENCY PROCEDURES

You should suspect a poisoning when somebody suddenly becomes sick or behaves in an unusual manner and there is no explanation for the illness or abnormal behavior. When this occurs, do the following in a calm, deliberate manner:

1. If poisoning is obvious, remove the poison from contact with the victim.

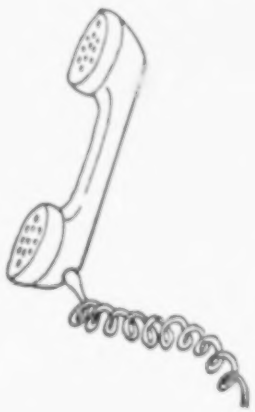
2. Call Poison Control Center
   (Phone No._____)

   OR

   Hospital Emergency Line
   (Phone No._____)

   Be prepared to give:

   a. age of victim;
   b. identity of product and ingredients;
   c. estimate of amount ingested; and
   d. symptoms.



3. If the victim is conscious, give one glass of water to dilute the "poison" and immediately telephone a medical professional or Poison Control Center for advice.

4. If you are instructed to go to an emergency room, take the poisonous substance or container with you (also vomitus if any).

5. Keep syrup of ipecac available in your home in case YOU ARE ADVISED TO USE IT to make the victim vomit.

   (It may be purchased from your pharmacist without a prescription but should only be administered on the advice of the Poison Center staff or a medical professional.)

Memorize the key words below in the order that they are given. Complete in a brief sentence the statement which begins with the key word.

Remove _____

Call _____

Don't Rely _____

Bring _____

Use _____

Useful tips:

1. If the victim is conscious, dilute swallowed corrosives (e.g., lye, acids) and petroleum products (e.g., gasoline, furniture polish) by giving some water -- VICTIM SHOULD NOT VOMIT.

2. Anything else (includes insecticides) should be vomited.

3. Fume inhalation -- move victim to fresh air. Begin artificial respiration. Do NOT provide food or drink.

4. In case of ingestion, if you don't know what has been swallowed--call the Poison Control Center (or medical professional) immediately. Giving the wrong first-aid treatment can complicate/worsen the victim's condition.

PRE-TEST/POST-TEST

Learning Activity One

TRUE OR FALSE

F 1. In all cases of poisoning, the first thing to do is give salt water and make the person vomit.

F 2. The effect produced from two or more chemicals interacting is called chronic effect.

F 3. Antidotes on product labels should be strictly followed in the event of a poisoning.

F 4. Ipecac is a drug used to induce sleep.

T 5. People display different reactions to different chemicals.

F 6. You can tell if something is toxic or dangerous because you will experience a reaction within a few hours.

T 7. Symptoms of toxic poisonings may occur hours or years after the exposure.

T 8. Headaches, sleepiness and dizziness may be signs of overexposure to toxic chemicals.

F 9. Swallowed acids should be vomited.

T 10. Potential household toxics include pesticides, drain openers, and air fresheners.

LEARNING ACTIVITY TWO

CAUTION: Use only in well ventilated areas. Wear gloves when using this product.

INGREDIENTS

Hydrogen Chloride 8.50%
Alkyl 67.00%
Dimethyl Benzyl Ammonium Chlorides 0.50%

POISON: Keep out of reach of children. If case of eye contact flood with water for 15 minutes and seek medical attention immediately.

DANGER: Keep out of reach of children.

WARNING: If swallowed seek medical attention immediately. Do not induce vomiting.

LEARNING ACTIVITY TWO

PURPOSE:

To increase awareness of labeling practices concerning potentially toxic household products.

OBJECTIVE:

The student will be able to:

1. differentiate between active and inert ingredients;
2. recognize general information that is required on some product labels;
3. give examples showing that inert ingredients often comprise the greater percentage of substances in a product; and
4. give at least two reasons why ingredient listings can be confusing to the purchaser of a potentially toxic product.

MATERIALS:

1. Copies of "What's in this Stuff" worksheets, pages 19-24. (One per group of students.)
2. Sample labels, pages 25-30. (One pesticide product label and one household product label per group of students. Note: disinfectants are considered pesticides by law.)
3. Household Products and Chemical Association Chart, pages 31-32. (One per student.)
4. Chalkboard/eraser or butcher paper.

TIME: 50 minutes.

TEACHING PROCEDURES:

1. Tell the students that today they are going to learn about another aspect of labeling, i.e., ingredients. First, however, they are going to try and answer some questions before reading information that will be given to them.
2. Orally give pre-test, page 33. Have students write the answers to the pre-test on a piece of notebook paper labelled pre-test. Do not discuss the answers at this time. Tell stu-

dents to look for the answers as the lesson is presented. Have students keep the pre-test for use in the post-test. (See evaluation, below.)

3. After students complete the test, allow for some discussion and questions. Ask students what they would like to know about labeling. Help them use the pre-test to generate questions. List questions where the whole class can see them. They will be used in step 6.

4. Divide class into groups--approximately 4-6. Hand out two sample labels and a worksheet to each group. Make sure each group has a pesticide product label and a household product label, from pages 25-30. Worksheets are found on pages 19-24. Have students complete the worksheet. Allow discussion in the groups. You may want to appoint or have groups elect a reader to be responsible for reading the factual information to the group and a writer responsible for completing the worksheet. This will allow the information to be presented clearly and accurately. It will also assist slow readers in understanding the information and help avoid embarrassment. Allow 20 minutes.

5. After the worksheets have been completed, allow time for discussion of the worksheets. Do students think the labels contain enough information to ensure or encourage safe use and disposal by consumers? Why? Why not? OPTION: As a homework assignment, have students examine how the worksheet labels compare with products of a similar nature found in students' homes or area stores.

6. Following the discussion, check the questions that were raised by the pre-test (step 3). Have they been answered?

7. Hand out the Household Products and Chemical Association Chart, pages 31-32. Tell the students that the chart primarily focuses on the potential long term effects of some chemicals. Ask where the students could go to find out about the health effects of chemicals. Answers may include the public library, poison control center (generally, acute effects only), state department of health services or toxicology libraries at universities.

EVALUATION:

Read the pre-test questions out loud. This time, students should write the answers on a sheet of paper labeled "Post- Test". Now give the answers to the questions, letting the students grade their papers (pre-test and post-test). By a show of hands, ask how many students increased their score as a result of the lesson. How many students got a perfect score on the post-test? Grading of the students can be accomplished by a post-test given at the end of the entire unit on toxic chemicals. See pages 75-77.

WHAT'S IN THIS STUFF?

Worksheet

Read: Use the sample label provided to answer the following questions.

1. What is the product name? _____

2. What is the intended use for the product? _____

_____

Read the following information if your product is a household product other than a pesticide. Be aware that disinfectants are considered pesticides because they temporarily "kill germs". If your product is a pesticide, turn to pages 22-24.

HOUSEHOLD PRODUCTS (Excluding Pesticides)

READ: When manufacturers list ingredients, the information may be confusing. Many chemicals are known by several different names. For example, toluene and toluol; and, aromatic naphtha and naphthalene are different names for the same chemical. Ingredient listings may also be presented in vague or general terms. For example, ingredients may be listed as "grease cutter", "corrosion inhibitor", "polishing agent", "coloring agent", "petroleum distillate", "aromatic hydrocarbon", or other vague terms.

1. List any general or vague terms that appear on the product label. _____

_____

_____

2. List any warnings or precautions given. _____

_____

_____

3. Are there any indications that this product is toxic or hazardous? _____

_____

_____

READ: There is no federal law that requires manufacturers to test their products for safety before being placed in the marketplace. The hazards of some consumer products are revealed after complaints are received by the Consumer Product Safety Commission, the organization responsible for enforcing the Hazardous Substances Act, (HSA). It could take years before enough injuries occur and complaints are received before government or the manufacturer removes the product from the market. Even when a product is removed from the market, injuries still occur because of the public's failure to follow re-call instructions or because they may be unaware that a re-call exists. If you suspect a product is hazardous or would like to see it sold in safer containers, write to the government: Consumer Product Safety Commission, Washington, DC 20207, or call their toll free number, (800)638-CPSC. Also write to the manufactuer. They can only correct faulty products if they are made aware of the problem. By law, manufacturers are required to keep records of all adverse health effects caused by a hazardous chemical they sell. Your letter to the manufacturer can help to build a case against the product.

The Hazardous Substances Act is the federal law that establishes labeling requirements for consumer products containing hazardous ingredients (except pesticides). The law, enforced by the Consumer Product Safety Commission, also grants the Commission the power to ban substances posing such an extreme hazard that adequate labeling cannot be written. Carbon tetrachloride, for instance, was banned in 1970 for use as a household chemical (such as a drycleaning agent, solvent, or glue) when it was found to cause liver and other body damage. Not many substances have been banned. Usually, the label or package is required to be changed to reflect the hazard. For example, the product may need to be packaged in child resistant containers.

If a chemical is considered a hazardous substance, by definition of the law, the product is subject to labeling requirements.

By definition, a hazardous substance is any substance or mixture of substances which is toxic, corrosive, an irritant, flammable or combustible, a strong sensitizer, generates pressure, is radioactive, or can cause substantial injury or illness.

It is important to note that the Hazardous Substances Act is concerned only with acute or immediate effects and does not take into consideration the long term (chronic) effects of a product. For products demonstrating an acute effect due to the result of a hazardous ingredient, the following labeling requirements exist:

a. Signal words must be used such as "danger", "warning" or "caution" depending on the level of danger. (Must appear on front label).

b. Description of the hazard must appear, such as "vapor harmful", "flammable", etc. (Must appear on front label.)

c. A statement warning users how to avoid the hazard must appear. Example: "Use in well ventilated room".

d. A common or chemical name for the hazardous substance must appear.

e. If necessary, instructions for safe use and handling must be given.

f. First aid instructions must be given.

g. Name and location of manufacturer, distributor or repacker must appear on the label.

h. Statement, "Keep Out of Reach of Children", or its equivalent, must be used.

4. List any of the above requirements that appear on the product label. _____

_____

_____

READ: Some products are not required to list product ingredients. This does not mean that potentially toxic ingredients are absent from the product. Rather, it simply implies that substances in the product are not considered to cause an immediate (acute) adverse reaction. Toxic chemicals may be present in a consumer product (without conforming to labeling practices) if the chemical falls below reporting requirements. For example, methyl alcohol used in quantities of less than 4% does not require labeling. Used in quantities of 4% and above, labeling is required. Methyl alcohol can cause blindness if ingested.

5. Can you think of consumer products that have no (or very vague) ingredient listings? If not, check your home or grocery store shelves for such products. _____

_____

_____

PESTICIDES

READ: Pesticides are chemicals designed to kill things--for example, insects, rodents, weeds and fungus. Disinfectants are considered pesticides if they "kill mold or bacteria", etc. Pesticides are regulated under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). Under this law, chemicals are supposed to be tested for their health effects; however, many pesticides in use today have not been tested for their long term effects on human health. This is because most pesticides in use today were put on the market in the 1950-60's before rigorous tests for chronic health hazards were required. Some authorities believe that a 1972 law requiring testing has been virtually ignored. Between 79% and 84% of all pesticides have not been adequately examined for their ability to cause cancer. In addition, 90-93% are inadequately tested for their ability to cause genetic mutations, and 60-75% are inadequate in terms of testing for birth defects. Information on the long term health effects of pesticides that have been tested, is currently kept secret from the public. Even when toxicological data exists, the data may not be adequate.

Testifying under oath in April 1976 at a Senate hearing, Environmental Protection Agency scientists challenged the reliability of animal tests for safety done by pesticide manufacturers and by contract laboratories. More recently, three high-level executives from a contract laboratory (Industrial Bio-Test of Northbrook, Ill.) were convicted for providing fraudulent or fabricated pesticide health and safety test data to the Environmental Protection Agency (EPA). The EPA is the federal agency charged with protecting public health and the environment from toxic substances exposure. A recent EPA study determined that at least 140 different pesticides were registered with more than 800 studies supplied by the IBT laboratory. Only 25 of the studies are known to be valid and sufficient to support the registration of the pesticide by the EPA.

6. List information that appears on the label regarding the health and environmental hazards from using this product.

_____

_____

7. What kind of information is listed regarding what to do if you are poisoned when using this product? _____

_____

READ: Farmers are required by law to have a license to spray pesticides, and therefore are given special information on use and disposal. Consumers have to rely upon the label to tell them about special use methods. Some chemicals

are restricted in terms of how they must be used. For example, some insecticides must not be sprayed directly on fruit that will be harvested while others are so corrosive that they must be kept away from equipment in order to protect the paint. Some pesticides used in agriculture are so long-lived that no one can enter the field for weeks after they have been applied.

8. Are there any special instructions concerning how to use this product?

_____

_____

9. Is any special equipment/clothing required when using this product?

_____

10. What precautions for disposal of this product are listed?

_____

_____

READ: Care in using pesticides is important, as the insecticides used in gardens often kill insects that are not harmful to the garden. For example, farmers often avoid spraying chemicals onto blooming trees in order to avoid killing the honey bees which are gathering pollen. In the home garden, lady bugs or honey bees can be killed when powdering rose bushes with a pesticide intended to kill aphids. Insects such as lady bugs are known as "beneficial insects" because they can actually help control other pests in the garden. Lady bugs eat aphids, which are a major pest in many backyard gardens. When you kill the beneficial insects, you must inherit their work.

11. What pests is this product intended to kill? _____

_____

READ: While farmers are required to get a permit before using certain pesticides, consumers are able to buy that same pesticide right off the shelf. Most homeowners are unaware of the conditions attached to commercial application of some pesticides. Consumers will often think that doubling the amount suggested for use on the label will double the effectiveness of the product. Some products, in addition to causing a health problem, can create other kinds of damage when used improperly. For example, applying too much herbicide to your garden can damage the soil

and make it impossible to grow anything. Manufacturers have established the legal right to not be responsible for problems caused by use of their product when that product is not used according to the instructions on the label.

12. What damage, do you think, this product can cause if used improperly? _____

_____

13. What information has the manufacturer given the consumer about obeying the label information? _____

_____

14. Has the manufacturer discussed, on the label, who is responsible for damage? _____

_____

READ: Ingredients on pesticide products must be listed as "active" or "inert". The term "active" applies to the ingredients that actually do what the product is intended to do. For example, in a pesticide, the active ingredient is the chemical that actually kills the pests. The active ingredients may be only a small percent of the total contents.

The term "inert" refers to any other substances in the product. These usually form a "vehicle" to make the active ingredients easy to apply. For example, the active ingredient may be mixed with cereal to make it attractive to bugs. The inert ingredients may also include perfumes, dyes, and stabilizing agents. The term "inert", however, does <u>not</u> mean that the substances are harmless. The inert ingredient can be as dangerous as the active ingredient. Inert ingredients are not tested for their acute or chronic health effects. Also, testing is not conducted for adverse health effects resulting from the use of chemicals in combination with each other. (Example: effects resulting from using two different products.)

15. List the active ingredients in the product. _____

_____

Percent of active ingredients: _____

16. List the inert ingredients in the product. _____

_____

Percent of inert ingredients: _____

BACK OF LABEL

All purpose cleaner removes: grease - heel marks - crayon - food stains - fingerprints - soap scum.

DIRECTIONS: General Use: Spray onto soiled area. Wipe clean. No rinsing. Laundry Prewash: On washable fabrics, saturate soiled area, rub gently. Launder as usual. Note: Do not use on varnished surfaces. If sprayed on glass or aluminum, wipe immediately.

CAUTION: Contains trisodium phosphate. In case of eye contact, flush with water. Call physician. Keep out of reach of children. Non-Flammable.

INGREDIENTS: Water, surfactants, builders, solvents and dye.

liquid disinfectant
TOILET BOWL CLEANER
removes stains disinfects deodorizes
will not harm septic tanks
ECONOMY SIZE
Active Ingredients:
Hydrogen Chloride 8.50%
Alkyl (67% C_{12}, 25% C_{14}, 7% C_{16}, 1% C_8-C_{10}-C_{18})
Dimethyl Benzyl Ammonium Chlorides.....0.75%
Inert Ingredients 90.75%
DANGER: KEEP OUT OF REACH OF CHILDREN. SEE OTHER PRECAUTIONS AND FIRST AID ON BACK.
EPA REG. NO. 777-29-AA
NET 24 FL.OZS. (1PT. 8FL.OZS.) (709 ml)

BACK OF LABEL

DIRECTIONS: POINT ARROW AWAY FROM YOU WHEN OPENING OR CLOSING CAP. Place finger under flip top and pull to open. After opening the cap point the top of bottle down into the bowl. . . . . CLOSE CAP SECURELY AFTER EACH USE. Rinse brush before putting away.

DISPOSAL DIRECTION: Do not re-use empty container. Wrap empty container in plastic bag and discard.

Will not harm white or colored bowls. Will not harm plumbing. This product has been specially formulated for use only in toilet bowls; it should not be used or placed on toilet lids, vanities, sinks, bathtubs, etc.; it should not be used with chlorine (bleach) or other chemical products.

DANGER: Corrosive--produces chemical burns. Contains Hydrochloric Acid. Do not get in eyes, on skin, or on clothing. May be fatal or harmful if swallowed. Do not breathe vapor or fumes. Keep out of reach of children.

FIRST AID: Internal--Call a physician immediately. Drink a teaspoonful or more of magnesia, or small pieces of soap softened with water in milk or raw egg white.

External--Eyes--Wash with water for 15 minutes. Get prompt medical attention. Skin--Wipe off the acid gently, immediately flood the surface with water, using soap freely, then cover with moist magnesia, or baking soda.

Garden Spray
To control: Aphids, spider mites, thrips, leafhoppers, and similar sucking insects
POISON
ACTIVE INGREDIENT:
Nicotine expressed as alkaloid..... 40%
INERT INGREDIENTS... 60%
TOTAL.....100%
DANGER! KEEP OUT OF REACH OF CHILDREN! See back for other dangers.
EPA REG. NO. 5887-7 AA
4 FL. OZ.

BACK OF LABEL

Garden spray may be used to control: Aphids (plant lice), spider mites, thrips, leafhoppers, rose slugs, leaf miners, lacebugs, scale crawlers and other sucking insects on roses, gladioli, chrysanthemums and certain other ornamentals. Can also be used on grapes, apples, apricots, cherries, peaches, plums and citrus fruit to control certain specified sucking insects (see instruction sheet). Can be used on peas, tomatoes, onions and cabbage to control specified insects.

Use Garden Spray on the farm for poultry. To control chicken lice and feather mites.

DANGER: Garden Spray is poisonous by swallowing, inhalation or skin contact. Do not breathe vapor or spray mist. Do not get in eyes, on skin, or on clothing. In case of contact, immediately flush skin or eyes with water and get medical attention for eyes. Launder clothing before re-use.

ANTIDOTE: Call a physician immediately. Give a tablespoonful of salt in a glass of warm water and repeat until vomit fluid is clear. Have victim lie down and keep warm. Give strong tea or coffee. Give artificial respiration if breathing has stopped.

NOTICE: Buyer assumes all risks of use, storage or handling of this material not in strict accordance with directions given herewith.

DIRECTIONS

Mix Garden Spray with water at the rate of three teaspoonfuls in 1 gallon of water to which has been added one ounce of soap. Spray both upper and lower sides of foliage thoroughly with this solution. Repeat applications when necessary.

To control feather mite, apply Garden Spray to tops of the perches three times, three days apart, at the rate of one ounce to 15 feet of roost. Repeat treatment when necessary.

PAINT & EPOXY
REMOVER
WATER
RINSEABLE
USE INDOORS - OUTDOORS - MARINE
Removes all paints: Latex, Epoxy, Varnish
NON-FLAMMABLE - NO NEUTRALIZING
DANGER! MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED. VAPOR HARMFUL. SKIN AND EYE IRRITANT. See cautions on back label.
16 FL. OZ.

BACK OF LABEL

This product is a formulation made especially for use by professionals and by those possessing at least rudimentary knowledge of removing various types of paints, varnishes and synthetic finishes. . . care must be exercised in its handling. . . several applications may be necessary. This product acts faster in warm weather.

DIRECTIONS:

1. Unscrew cap slowly so vapors can escape.
2. Use old or inexpensive new brush.
3. Brush on thick coat in one direction only.
4. Allow to set until surface is blistered.
5. Remove finish with water, spatula, steel wool or cloth.
6. Rub clean and dry and apply new finish.
7. Close container after each use.

Extreme care should be taken to see that this material does not come in contact with any surface other than where removal of the finish is desired. Spillage on vinyl or other synthetic surfaces will cause extreme damage. Do not store this material in a plastic container. Store in cool place.

DANGER! - POISON!

CONTAINS METHYLENE CHLORIDE AND METHANOL. CANNOT BE MADE NON-POISONOUS. If swallowed, induce vomiting by giving a tablespoonful of salt in warm water and repeat until vomit fluid is clear; follow with two teaspoonsful of baking soda in glass of water. Have patient lie down and keep warm. Cover eyes to exclude light. In case of contact with eyes, flood repeatedly with water. In eigher case, CALL A PHYSICIAN. Avoid breathing of vapor or contact with skin or eyes. Contact with flame or hot surfaces may produce toxic gases. Close container after each use.

USE ONLY WITH ADEQUATE VENTILATION.

KEEP OUT OF REACH OF CHILDREN.

BACK OF LABEL

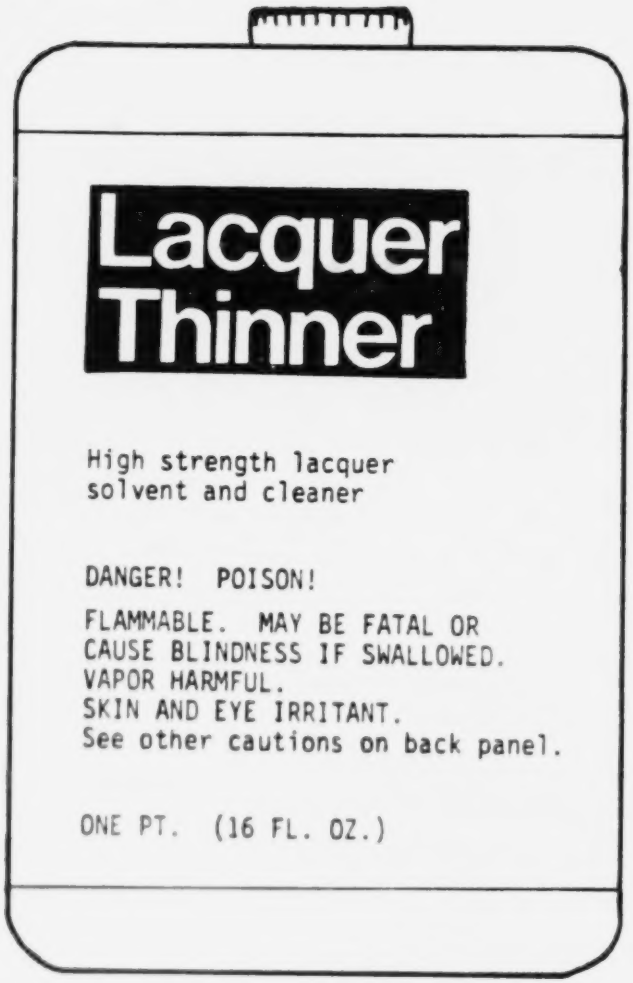
For general cleaning, disinfecting, and deodorizing of all hard, nonporous surfaces.

DIRECTIONS: Use 1/4 cup in half a pail of warm water (1 gal.). Wipe or mop to wet surfaces thoroughly. Rinse food preparation areas with water. For sensitive skin, use rubber gloves.

HAZARDOUS TO HUMANS AND DOMESTIC ANIMALS
WARNING: Avoid contact with eyes. Causes eye irritation. May be harmful if swallowed. Avoid contamination of food.

STATEMENT OF PRACTICAL TREATMENT:
In case of accidental contact, immediately flush eyes with large amount of water for at least 15 minutes and call physician. If accidentially swallowed drink promptly a large quantity of water and call physician.

STORAGE/DISPOSAL: Do not reuse empty container. Wrap container and put in trash collection.



BACK OF LABEL

A blend of solvents formulated exclusively for use with most lacquer base wood and metal finishes. High strength combined with a moderate evaporation rate makes lacquer thinner an excellent cleaner and degreaser.

Use for general cleaning and degreasing of metal tools and engine parts. Clean brushes and spray equipment as long as lacquer remains soft on these tools.

Do not use on rubber, plastic, asphalt tile, lineoleum or synthetic bristle brushes. Not compatible with most automotive or other specialty lacquers.

CAUTION
CONTAINS METHANOL AND TOLUOL
CANNOT BE MADE NON-POISONOUS
NON-PHOTOCHEMICALLY REACTIVE

Keep away from heat, sparks and open flame. If swallowed do not induce vomiting. CALL PHYSICIAN IMMEDIATELY. Avoid contact with eyes, skin and clothing and breathing of vapor or spray mist. In case of eye contact, immediately flush thoroughly with water and get medical attention. For skin contact wash thoroughly. Close container after each use. Do not transfer contents to unlabeled bottles or other containers.

USE ONLY WITH ADEQUATE VENTILATION.

KEEP OUT OF REACH OF CHILDREN

Since the manufacturer cannot control conditions or method of application, no warrantly or liability beyond the replacement of defective product is offered.

HOUSEHOLD PRODUCTS AND CHEMICAL ASSOCIATION CHART*

	Cadmium	Carbaryl (Sevin (R))	Chlordane	Cresol	DDVP (Dichlorvos)	Lindane	Lye	Methylene Chloride	Nitrosamines	Phenol	Pine Oil	Potassium Hydroxide	Rotenone	Toluene	2, 4-D	2, 4, 5-T	Xylene
HOUSEHOLD PRODUCTS																	
Disinfectant							•			•	•	•					
Drain Opener							•				•	•					
Furniture Polish									•	•							
Oven Cleaner							•				•	•					
Paint and Varnish	•													•			•
Paint Remover								•						•			•
AUTOMOTIVE PRODUCTS																	
Carburetor Cleaner				•													
Choke Cleaner														•			•
Engine/Motor Cleaner				•			•	•				•					
GARDEN PRODUCTS																	
Insect Killer		•	•		•	•							•				
Weed Killer															•	•	

*This chart is only a partial indication of some hazardous materials which may be found in select consumer products. It is not intended to be used as a complete listing of such product ingredients.

SOURCES:

Clinical Toxicology of Commercial Products, Robert E. Gosselin, M.D., Ph.D., et.al., Fourth Edition, Baltimore: Williams and Wilkings, 1976.

Dangerous Properties of Industrial Materials, N. Irving Sax, et.al., Fifth Edition. New York: Van Nostrand Reinhold Company, 1979.

Hazardous and Toxic Effects of Industrial Chemicals, Marshall Sittig. Park Ridge, N.J.: Noyes Data Corporation, 1979.

Occupational Health Guidelines for Chemical Hazards, USDHHD, NIOSH, January 1981. NIOSH #81-123.

Poisons, Vincent J. Brookes, Third Edition. New York: Robert Krieger Publishing Company, 1975.

The Household Pollutants Guide, Center for Science in the Public Interest. New York: Anchor Books, 1978.

CHEMICAL NAME	HEALTH EFFECTS*
Cadmium	Carcinogen. Respiratory irritant. Causes kidney damage. With experimental animals, cadmium produced damage to the liver and central nervous system and testicular atrophy.
Carbaryl (Sevin (R))	Suspected animal carcinogen. When given to several species of pregnant animals, has also caused defects in their offspring. May cause kidney damage. Causes acute nervous system effects.
Chlordane	Suspected carcinogen. Predominantly affects the central nervous system causing irritability, tremors, and convulsions. Causes kidney damage.
Cresol	Very corrosive to all tissues. Prolonged or repeated absorption of low concentrations of cresol through the skin, mucous membrane, or respiratory tract may cause chronic systemic poisoning.
DDVP (Dichlorvos)	Testing suggests the chemical has cancer-causing properties. May cause gene damage. Causes acute nervous system effects.
Lindane	Suspected human carcinogen. May cause aplastic anemia. Skin, eye, respiratory irritant.
Lye	Markedly corrosive to all body tissues. Causes burns and frequently deep ulcerations with ultimate scarring. Mists, vapors and dusts cause small burns. Eye contact can cause severe damage to delicate tissue.
Methylene Chloride	Suspected carcinogen. Causes liver and kidney damage in animals. Exposure to this chemical may make symptoms of angina worse. Smokers and persons with cardiac disease may be at increased risk due to reports of excessive carboxyhemoglobin levels following exposure. Alters ability of blood to carry oxygen to tissues. Skin, eye and respiratory irritant (liquid and vapor). Mild narcotic.
Nitrosamines	Suspected human carcinogen. Potent cancer causing agent in animals. Can cause liver damage, jaundice and fever.
Phenol	May cause severe burns upon skin contact.
Pine Oil	Irritating to eyes and mucous membranes. Systemic effects include weakness and central nervous depression, with hypothermia and respiratory failure. Allergen. Causes kidney irritation/damage.
Potassium Hydroxide	Extremely alkaline and very corrosive to all body tissues.
Rotenone	Skin, eye and respiratory irritant. Possible reproductive hazard. Can cause tremors and convulsions. Animal experiments with rotenone dust has caused liver and kidney damage and has produced tumors.
Sodium hydroxide	See Lye.
Toluene	Possible reproductive hazard. Vapor causes narcosis. Skin, eye, respiratory irritant.
2, 4-D	Causes liver and kidney damage in animals. May cause convulsions and dermatitis in humans.
2, 4, 5-T	Suspected animal carcinogen. Common contaminants of commercial preparations of 2, 4, 5-T may cause severe acne and liver damage. Animal experiments have shown that these contaminants may produce damage in unborn rats.
Xylene	Liver and kidney damage have been observed. Possible reproductive hazard. Eye and respiratory irritant. Can cause dermatitis and central nervous system depression.

*Although not listed, a few common short-term effects of chemical overexposure include dizziness, vomiting, nausea, sweating, and blurred vision. Long term effects, which is the major focus of this glossary, is provided to alert consumers of the potential dangers associated with particular chemicals and the necessity of using and disposing of them safely. It should be noted that many scientists believe that human health effects can be predicted from the results of animal studies.

BEST COPY AVAILABLE

PRE-TEST/POST-TEST

Learning Activity Two

TRUE OR FALSE

F 1. Manufacturers of household cleaning agents are required to list all the ingredients of their products.

F 2. Labels of all home and garden products must be precise showing exactly what substances are present and the amounts of each.

F 3. Household products (e.g., cleaners, drain openers, paint removers, etc.) must be tested for their long term health effects before being placed on the market.

T 4. Products placed on the market are not guaranteed to be safe.

F 5. If ingredients are listed as "inert", they are harmless.

F 6. "Active" ingredients make up the major portion of a product.

T 7. A hazardous substance is described as highly toxic or toxic, flammable or combustible, corrosive, an irritant, a strong sensitizer, radioactive, capable of generating pressure, or capable of causing substantial illness or injury.

F 8. HSA stands for Health Safety Act.

LEARNING ACTIVITY THREE

CONCEPT II

LEARNING ACTIVITY THREE

PURPOSE:

To demonstrate that unsafe use of household toxics can adversely affect one's health.

OBJECTIVE:

Students will be able to:

1. list some of the common health effects that may result from the unsafe use of household toxics;
2. distinguish between acute and chronic exposure;
3. list ways toxics are absorbed and stored in the body; and
4. list at least five safety rules for using products containing potentially harmful chemicals.

MATERIALS:

1. Make copies of pages 39, 42-45, one per student.

   OPTION: Make acetate or transparency of page 39 to use on the overhead projector; OR, make copies for each student. If using acetate or transparency, you will need a water soluble pen and an overhead projector. A transparency may also be used for page 46 or, the information may be written on a chalkboard.

2. Chalkboard/eraser.

TIME: 50-minutes.

TEACHING PROCEDURES:

1. Explain that this lesson will focus on acute and chronic health effects of toxic chemicals; how to protect ourselves when using products containing toxic substances; and how toxic substances get into the body.
2. Orally give the Pre-test, page 47 (allow no more than 5 minutes). Have the students write the answers to the pre-test on a piece of notebook paper labelled pre-test. Do not discuss

the answers at this time. Tell students to look for the answers as the lesson is presented. Have students keep the pre-test for use in the post-test. (See evaluation, page 38).

3. Begin the lesson by telling the students that some people believe that poisonings are always fatal and occur only through ingestion; that is, eating or drinking a particular thing. In fact, poisonings are NOT always fatal and occur in a number of ways. Put up transparency on page 39 or ask students to refer to handout (same as transparency). A teacher study guide explaining the handout/transparency is given on page 40. Explain that poisonings can occur from toxics that get into our system through:

   inhalation - through the air we breathe
   ingestion - through eating or drinking
   dermal exposure - absorption through the skin

4. As was mentioned earlier, not all poisonings are fatal. Some poisonings, attributed to toxic chemical exposure, may cause reactions such as a headache, nausea, shortness of breath, burns, and eye or nose irritations. These reactions usually occur within a short time of exposure and are referred to as acute effects. Other reactions from some toxic substances may take years to show up in the body. Such effects may include cancer, birth defects, or kidney and liver damage. These effects, which occur from repeated exposures over a long period of time, are called chronic effects. To facilitate discussion, a teacher study guide is provided on page 41.

   It is also important to mention that people are affected by toxic chemicals in different ways. Some people are more susceptible to poisonings than others just as some are more susceptible to suntans or food allergies--our bodies react differently to different things.

5. Tell students to refer to the Household Products Survey worksheet on pages 42-45. The worksheets will also be used in the lesson on safer substitutes, therefore, students should be instructed to keep the worksheets for later use. Tell the students that, for this lesson, they are to ignore the "What You Can Do" column. Have the students identify some acute and chronic effects associated with the products mentioned. Give time for the students to read the material and write their answers.

   After 15 minutes have elapsed, ask the students to give some answers and use the following format to put responses on the chalkboard.

EXAMPLE:

Product	Acute Health Effects	Chronic Health Effects
aerosol spray	headaches nausea skin rash, etc.	liver damage heart problems lung cancer, etc.

4. Tell students that one way we can protect ourselves from experiencing adverse reactions from toxic chemical exposure is to be careful when we use products containing potentially hazardous ingredients. A few safety rules are as follows: Before class, write the rules on the chalkboard or butcher paper, and then have a discussion on them. Write only what is underlined. The additional information is provided to encourage discussion.

USE PRODUCTS IN WELL-VENTILATED AREAS TO AVOID BREATHING FUMES. 1) One open window is not considered adequate ventilation. 2) If using a fan, make sure the air is blowing away from you, not in your face. Make sure the air is escaping to the outdoors and is not being recirculated indoors. 3) Take "fresh air" breaks. 4) Work outdoors.

AVOID USE OF AEROSOLS. Breathing the fine mist can cause it to settle deep in the lungs and be quickly absorbed in the bloodstream. Aerosols can explode when heated. They should never be placed in sunlight, near a stove, in a glove compartment or in a fire.

KEEP PRODUCTS OUT OF REACH OF CHILDREN AND PETS. Most poisonings occur when a product is left unattended. Keep all potentially toxic products on high shelves, in locked cabinets, and away from food items to avoid any confusion or accidental contamination.

"CLEAN-UP" WHEN YOU ARE FINISHED USING A HOUSEHOLD TOXIC. Carefully seal products when you are through using them. Some open products can evaporate quickly, thus polluting the air. Store spray cans and other flammables in a cool place, away from heat sources. Rags used for polishing or stripping furniture are fire hazards. Dispose of them in covered metal containers. This prevents oxygen from reaching the rags and igniting.

WEAR PROTECTIVE CLOTHING. Wear rubber gloves, long sleeve shirts, long pants, and closed-in shoes to prevent chemicals from entering the bloodstream by being absorbed through the skin. Protective glasses should be worn to keep particles and solutions out of the eyes. It is best not to wear soft contact lenses when working around solvents as they can absorb chemicals and keep them near the eye.

NEVER MIX PRODUCTS. Some products contain toxic chemicals that create intense heat and/or toxic fumes when mixed with other products. For example, a toxic gas is created from mixing products containing chlorine bleach (e.g., cleansers) with ammonia or products containing acids (e.g., some toilet bowl cleaners). Never mix different brands of similar products. Each brand may contain different ingredients.

USE ONLY THE RECOMMENDED DOSAGE. Never use more of a product than the amount given on the label. Twice as much does NOT mean twice as effective and, can cause more harm than good. For example, applying too much weed killer (herbicide) to a garden can damage the soil and make it impossible to grow anything.

KEEP PRODUCTS IN THEIR ORIGINAL CONTAINERS. Over the years, some manufacturers have significantly altered the ingredients of a particular product. In the event of a poisoning, the product label can give a clue to the product's age and ingredients. If you don't intend to use the product immediately, it is a good idea to write the date of purchase on the product label. In addition, accidents have occurred because toxicants were placed in containers associated with food and drink (e.g., cereal boxes, coffee cans, cider jugs, milk cartons). Kerosene and other petroleum products stored in soda bottles and tin cans have resulted in many accidental poisonings.

BUY ONLY WHAT YOU NEED. Some products require using only small amounts to achieve effectiveness. Buying the "economy size" may leave you with unwanted portions and a disposal problem.

5. For discussion purposes, write the labeling information from page 46 on the chalkboard (or use transparency). This information was taken from actual products.

   Judging from the information given, ask the students:

   - if they feel the products are appropriately labeled according to their hazard or do they feel the product is more hazardous than the signal word (danger and caution) given.

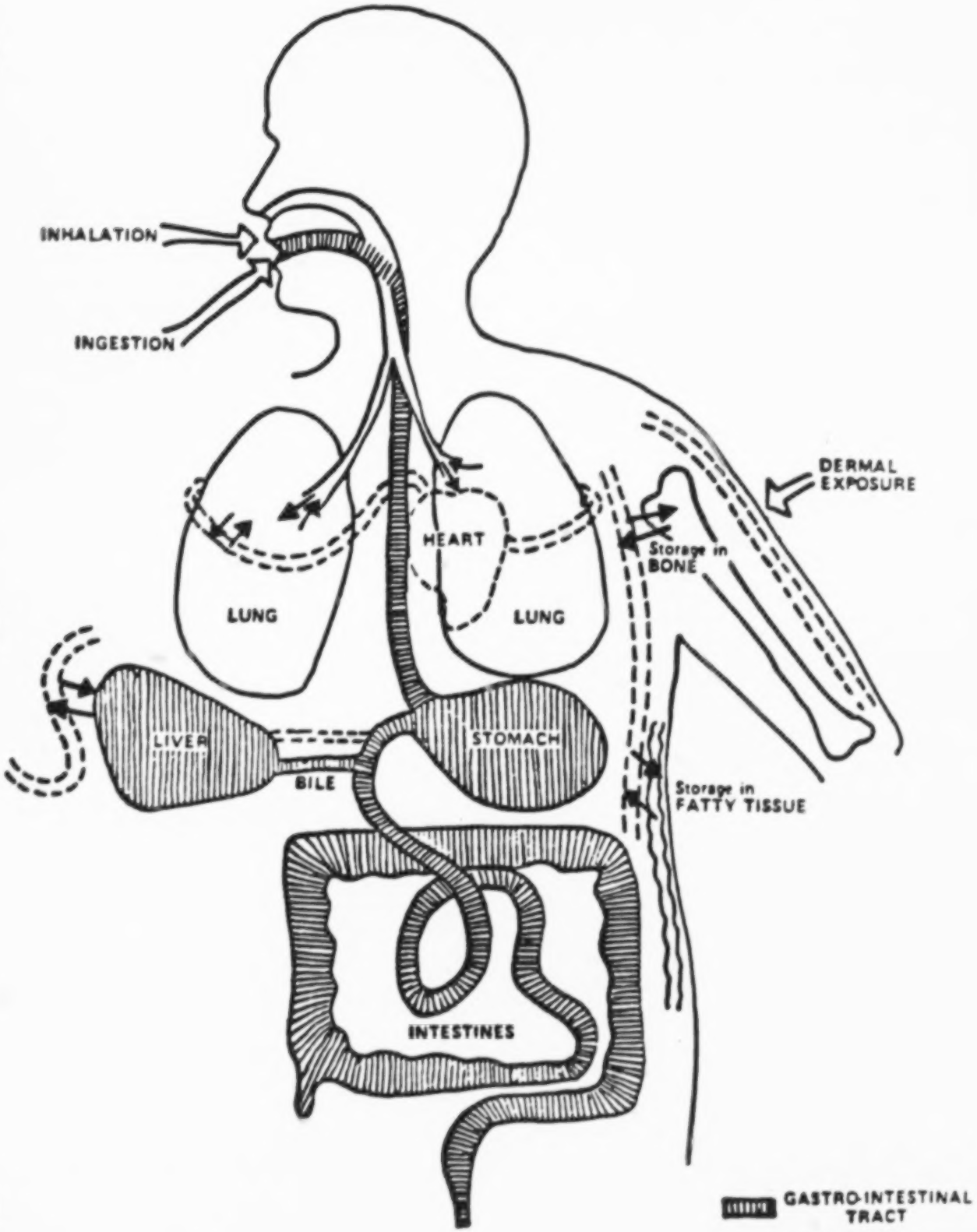
- what type, if any, of protective clothing should be worn.
- should the product list other information (e.g., how to dispose of the product).

EVALUATION:

Read the pre-test questions out loud. This time, students should write the answers on a sheet of paper labelled "Post-Test". Now give the answers to the questions letting the students grade their papers (pre-test and post-test). By a show of hands, ask how many students increased their score as a result of the lesson. How many students got a perfect score on the post-test?

Grading of the students can be accomplished by a post test given at the end of the entire unit on toxic chemicals. See pages 75-77.

HOW TOXICANTS ARE ABSORBED BY THE BODY



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HOW DO TOXICANTS GET INSIDE PEOPLE, ANIMALS, AND PLANTS?

There are a number of ways for a toxic substance to pass through living organisms. Toxic substances enter the body in one of three ways:

1. By eating or drinking contaminated food or water. This route is called ingestion.

   The toxin has entered the gastro-intestinal tract, sometimes referred to as the G.I. tract.

   Some substances that are ingested remain in the G.I. tract and are passed out in the feces.

   Others pass from the stomach via the bloodstream (either unchanged or partly broken down) to the liver. The liver is a special organ that can change many substances into a form that is more easily excreted. If toxic chemicals are not broken down by the liver, they may recirculate through the body. The liver can be severely damaged by chemicals that destroy liver cells. The destroyed cells are replaced by scar tissue which impairs the functioning of the liver. When enough liver cells are destroyed, the organ can no longer function properly. One symptom of liver disease is jaundice--a yellowing of the skin and eyes. Also, some toxic substances remain in the body and accumulate over the years.

2. By breathing contaminated air. This route is called inhalation. The toxin has entered the respiratory system.

   It is interesting to note that fish do not breathe air, and they have no respiratory system. But they do have gills which provide a route or entry from the water in which the fish are swimming. Substances entering through the lungs, or the gills, pass directly into the circulatory system.

3. Through contact with the skin. This is dermal exposure.

   Substances absorbed through the skin may also pass into the circulatory system. The circulatory system carries toxics or their degradation products around the body. Many are removed from the blood by the kidneys and then passed out in the urine. Others are persistent and lodge themselves in the body's fatty tissues.

ACUTE VS. CHRONIC

Acute means sudden or immediate.
Chronic means long-term.

These two words are used in two ways when talking about toxicity. Toxicity means the degree to which a substance is poisonous. We can speak of acute or chronic exposure and acute or chronic effects.

> Acute exposure is a single or very brief exposure.
> Chronic exposure is a repeated exposure over a long period of time.

Both acute and chronic effects depend on how poisonous--toxic--the substance is, and what the dose is.

> Acute effects are the ill effects that occur almost immediately after exposure to too much of a toxic substance. For example, getting jittery after you drink coffee or soda pop with caffeine is an acute attack.
>
> Chronic effects are the ill effects that do not appear immediately but do appear after a period of time. Chronic effects often occur at doses too small to produce acute effects. A single acute exposure to some substances in early pregnancy may produce a baby with a birth defect, which is a chronic effect. On the other hand, repeated cigarette smoking (chronic exposure) might not lead to the development of lung cancer (a chronic effect) until many years after the person started smoking.

There are many kinds of chronic effects. Some of the most common are:

Liver or kidney damage: Organs that are primarily concerned with breaking down and getting rid of toxic substances in the body are damaged.

Central Nervous System (CNS) Damage: Damage to the CNS (nerve cells in the brain and spinal cord) can be exhibited in minor ways, such as depression or slight changes in I.Q., or can consist of serious damage, such as paralysis.

Cancer: A cancerous cell is one that starts to multiply and doesn't know when to stop. Eventually a tumor will grow and spread. A cancer-causing chemical is called a carcinogen.

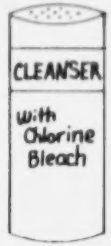
Birth defects: Birth defects can be caused in two ways:

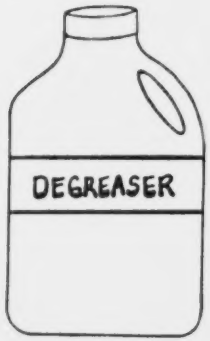
1. A substance which changes the baby as it is developing inside its mother is called a teratogen. Only pregnant women are subject to the effects of teratogens.

2. Chemicals which cause mutations are called mutagens. A mutation is a change in a cell which alters some characteristics of the organism. If the mutation is in the sperm or egg cell which makes a baby, this change will be passed on to the baby, and to the baby's children.

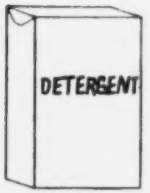
W O R K S H E E T

HOUSEHOLD PRODUCTS SURVEY

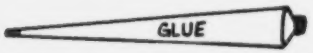
PRODUCT	HEALTH EFFECTS	WHAT YOU CAN DO
Aerosol Spray Products (including many different kinds of health, beauty and cleaning products)	Aerosol products release particles in air that can be inhaled into your lungs and then absorbed into your bloodstream. Thus, a chemical that is harmless to external parts of the body may be extremely dangerous if inhaled as an aerosol mist. The combined effect of the ingredients common in most aerosol spray products is another area of grave concern that has not been thoroughly investigated. Aerosol spray products have been associated with headaches, nausea, shortness of breath, eye and throat irritations, skin rashes, burns, lung irritation, liver damage and heart problems. A gradual accumulation of data is also beginning to link aerosol use/misuse to cardiac arrhythmias or "sudden death", birth defects, and lung cancer. Aerosol products will explode if they are exposed to heat, causing burns and very serious injury.	You can buy products in a non-aerosol form. Most products also come in creams, solids, liquids and pump sprays. They will also save you money because aerosol products can be expensive. If you use aerosol products do not inhale the fumes. Make certain aerosol containers are not exposed to heat. Never throw empty containers into a fire or incinerator.
Chlorine Bleach 	Chlorine bleaches can irritate and burn your skin and eyes. Even the fumes from chlorine bleach are irritating to your eyes and nose. Never mix chlorine bleach with ammonia, toilet bowl cleaners, or other products to make a stronger cleaning solution. The chemicals in the products may not be compatible and may produce very dangerous gases that can be deadly. If the label doesn't say to mix the product with another product, don't do it.	If you use chlorine bleach, handle it carefully. Instead of using chlorine bleach as a cleaning agent, make your own cleaning solution by mixing baking soda in water.

PRODUCT	HEALTH EFFECTS	WHAT YOU CAN DO
Solvents (a substance that dissolves something else). Examples of products containing almost 100% solvents are paint thinners, furniture strippers, dry cleaning fluids, degreasers, turpentine and nail polish removers. 	Most solvents dissolve skin oils, causing skin irritations and damage. Solvent vapors or splashing of the liquid in the eye can cause severe damage. Another area of concern is the wearing of soft contact lenses. The same absorbency that allows contacts to retain medication can prove dangerous in the presence of strong vapors from solvents. Instead of being washed away quickly by tears, chemicals can be absorbed and held against the eyes until the lenses are removed. Thus the time of exposure can cause considerable eye damage or irritation. The breathing of solvents is hard to avoid because many evaporate quickly and enter the air. They can cause nose and throat irritations, damage to lung tissue and can enter the bloodstream through the lungs. Other symptoms may then follow such as dizziness, nausea, headaches, sleepiness, clumsiness and irregular heartbeats. Repeated exposure to small amounts of some solvents can cause internal damage, starting with the liver and kidney which are the first line of defense against unwanted chemicals in the blood.	Use solvents with utmost care and respect. Never transfer them to unlabelled containers--especially food/drink containers. If possible, use solvents outdoors. When using indoors, have plenty of fresh air and good ventilation.
Rug & Upholstery Cleaners	May contain some chemicals which, when inhaled, can cause nausea, anemia, liver damage, convulsions and possibly coma.	Clean rugs and upholstery with a soap or non- aerosol shampoo. Wear gloves and make sure you have ventilation during the cleaning process.

HOUSEHOLD PRODUCTS SURVEY (Continued)

PRODUCT	HEALTH EFFECTS	WHAT YOU CAN DO
Detergents 	Non-phosphate detergents can be very highly alkaline and they can cause skin and eye irritations. They are very dangerous if they are swallowed. Phosphate detergents can build up and pollute our water systems because phosphates are not biodegradable.	Use soap. Reduce use of detergents by using lesser amounts and supplementing remainder with baking soda.
Air Fresheners	These products may interfere with your natural sense of smell by coating nasal passages with an oily film or by diminishing the sense of smell with a nerve-deadening agent. They don't eliminate room odors, they simply introduce a new smell and mask the offensive odor.	A dish of hot vinegar can remove room odors. A bouquet of flowers or herbs can give your room a pleasant smell. A box of baking soda placed in the refrigerator removes odors.
Paints	Chemical components in paints can irritate your eyes, skin and lungs. Inhaling paint fumes can give you headaches and nausea. Other chemicals in paints can cause respiratory problems, muscle weakness and liver and kidney damage. Some paints are flammable.	If you can, paint items outside. When you paint indoors, make certain you have adequate ventilation. Latex paints can eliminate the need to use paint thinners which contain additional toxic chemicals.

HOUSEHOLD PRODUCTS SURVEY (Continued)

PRODUCT	HEALTH EFFECTS	WHAT YOU CAN DO
Hobby Materials: Glues & epoxy 	These substances are flammable. They are skin and lung irritants, and can make you more sensitive to a number of other substances. Some people have died after deliberately inhaling fumes from these products.	Read the product labels carefully. Wear gloves when you use them and make certain you have good ventilation. Store these products away from heat and children.
Hobby Materials: Photography supplies	Many of the chemicals used to develop photographs are very dangerous. Examples include methanol, xylol, methylene chloride, turpentine, benzene, acetates, and hydrochloric acid. Methylene chloride and benzene are associated with causing cancer. Many are flammable and can cause skin, eye and lung irritations. Some contain acids which can burn and blind you.	Work with these materials only in a well-ventilated area. Wear goggles and gloves. Store these chemicals in unbreakable containers away from heat Store acids in non-metal containers. Never add water to acid to mix. Avoid products that contain benzene.
Hobby Materials: Glazes	Many heavy metals are found in glaze materials, especially colorants. Uranium, lead and zinc chromate, and cadmium can cause cancer. All chromium and nickel compounds are suspected cancer-causers. Antimony, manganese and cadmium compounds are highly toxic by inhalation.	Use less toxic colorants such as many iron compounds (oxides, ochres, etc.) titanium tin, zirconium, copper, and cobalt compounds.

OVEN CLEANER

DANGER: KEEP OUT OF REACH OF CHILDREN

Contains Sodium Hydroxide (lye). Avoid contact with skin, eyes, mucous membranes and clothing. Do not take internally. Wear rubber gloves while using. Avoid breathing spray mist. Do not puncture or incinerate container. Do not expose to heat or store at temperatures above 120°F. Avoid freezing.

DISINFECTANT

CAUTION: KEEP OUT OF EYES

If contact occurs, wash eyes immediately with water. Avoid contact with food. . .

INSECT AND FUNGI KILLER

CAUTION: HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH THE SKIN

Avoid contact with skin, eyes or clothing. . .

PRE-TEST/POST-TEST

Learning Activity Three

I. Matching-Teacher should write the following words on the chalkboard and read the statements below to the students.

a. Infestation	d. Chronic	g. Teratogen
b. Acute	e. Inhalation	h. Pesticides
c. Ingestion	f. Solvent	i. Mutagen

c 1. Refers to eating or drinking something.

d 2. The effect caused by repeated exposures, over a period of time, to a potentially toxic substance is called:

f 3. Any product that dissolves something else. Turpentine is one example.

e 4. One way toxics in the air can get into the body.

g 5. Substance that affects a baby while it is developing inside the mother.

II. True or False - Write T for True or F for False.

F 6. Most household products do not contain toxic substances because they can be purchased by anyone.

F 7. Doubling the amount of a product increases the effectiveness of that product.

F 8. Household products containing toxic substances that evaporate or are sprayed in the air are not that harmful.

F 9. We should wear rubber gloves when working around toxic chemicals to keep our hands from being stained.

T 10. We can have contact with toxic products and reduce their potentially harmful effects if we take proper precautions.

F 11. Two ways toxics are absorbed through the body are by infestation and skin absorption.

T 12. A headache can be a symptom of a poisoning.

LEARNING ACTIVITY FOUR

CONCEPT III

LEARNING ACTIVITY FOUR

PURPOSE:

To demonstrate that unsafe disposal practices can adversely affect health and the environment.

OBJECTIVE:

Students will be able to:

1. identify unsafe disposal mechanisms for toxics;
2. identify some safe disposal methods; and
3. differentiate between the terms persistence, degradation, bioaccumulation, and bioconcentration with respect to toxic substances.

MATERIALS:

1. Information sheets, pages 52-54, 62-64. Pages 60-61 are optional. (One per student.)
2. Chalkboard or butcher paper.

TIME: 50-minutes.

TEACHING PROCEDURES:

1. Tell the students, now that they are aware of the potential dangers associated with household toxics, they should also be aware that unused portions of such products create a disposal problem.
2. Orally give the Pre-test, page 66 (allow no more than 5 minutes). Have the students write the answers to the pre-test on a piece of paper labelled pre-test. Do not discuss the answers at this time. Tell students to look for the answers as the lesson is presented. Have students keep pre-test for use in the post-test. (See evaluation, page 51.)
3. Begin the lesson by telling the students, "When we no longer have use for products we buy, we get rid of them." Ask the students how they think people usually dispose of toxics. Accept all reasonable answers. Responses should include:

- Throwing toxics on the trash;
- Pouring them down a drain;
- Burying them in the yard;
- Burning them.

Tell the class that some authorities now consider such disposal methods unsafe.

4. Tell the students that people also store products in their homes indefinitely because they don't know how to get rid of them. Ask students to give some reasons why toxics might be accumulating in the home awaiting safe disposal. Accept all reasonable answers. Answers might include:

   - Too much of the product was originally bought
   - Products were left behind in the garage by the former tenant
   - Switched to a different brand
   - Chemical was banned from use by the government and consumer didn't know what to do with it
   - Spouse died and all the chemicals used for his/her hobby are no longer wanted

5. Pass out the information sheets on pages 52-53. Discuss. Does anyone have any experiences to relate relevant to hazards associated with unsafe disposal practices?

6. Ask, "When we throw toxics down the drain, in our yard, or in the ditch/gutter, where do they ultimately end up?". Pass out information sheet on page 54. Discuss. Teachers can facilitate a discussion more easily if they (teachers) read the information on pages 55-59 before teaching the lesson.

7. Tell the students that some chemicals that are used and disposed can degrade while others persist in the environment for a very long time. Replicate the diagram from page 60 on the chalkboard. Using the information sheet (page 60) explain what "degradation" and "persistence" mean.

8. Tell students some chemicals are also guilty of bio-accummulating and/or bioconcentrating. Does anyone want to guess what those words mean? Provide students with the answers based on the information provided on page 61. Relay the story on bioconcentration from page 61. (If you prefer, pages 60-61 could be copied, and given to each student.)

   Ask the students the following questions:

   - What could possibly happen if a human ate the larger fish?

   - What might happen to fishermen/women who eat several of the smaller fish every week?

- Should anything be done to alert fishermen/women to the potential dangers? If so, what should be done and who should do it? (Example: Should the Department of Fish and Games post warning signs?)

- Should someone be responsible for regularly checking the levels of contaminants in fish and other marine life intended for consumption. A homework assignment could be given that directs students to identify and contact a government agency that is responsible for water quality. The students should attempt to find out: 1) if fish caught in local waters are regularly monitored for toxic contamination; 2) how often, if at all, monitoring takes place; 3) if monitoring is done, what chemicals are being monitored; 4) if an area is having a contamination problem with a specific chemical, will that chemical automatically be checked in fish to determine whether or not the fish is contaminated.

9. Tell students that issues relating to toxic substances are generally controversial because there is no clear proof on how many of the substances will react once they are in the environment and how they will react when they are mixed with other substances. Some people argue that there is enough proof and the proof indicates that many substances should be taken off the marketplace or be better regulated. Others believe there is not enough proof and that chemicals should be considered innocent until proven guilty. What do you think? Allow time for discussion.

10. Pass out the worksheets on page 62-64. Instruct the class to read the worksheets and choose five issue areas. Direct them to provide a written response to Side A or Side B of each issue area they choose. Have each student complete the assignment in class or at home. In either case, allow for open discussion of the issue areas in class. Students who chose to answer "Side A" can debate their responses with students who addressed the same issue area but chose to respond to "Side B". Students should also write why they chose "Side A" over "Side B" (or vice versa) and what additional information they would like to possess that might support their position.

    OPTION: Teacher may want to assign issue areas and "sides" to different students.

11. Tell students that disposal of hazardous waste is often costly but the price of cleaning up the environment from indiscriminate disposal practices is far greater. The cost to human health cannot be given a cost figure.

    Ask "How can we safely dispose of hazardous waste?" (Allow students time to respond.) Accept all reasonable responses and include the following:

a. Recycling of waste oil is available in some states. The Association of Government Oil Recycling Officials (AGORO) may assist you in determining if a waste oil recycling program is operating in your state. The East Coast contact is Hilary Tatem at (301)269-3355 in Annapolis, MD. The West Coast contact is Guenther Moskat, also with the California Waste Management Board in Sacramento, CA at (916)322-1443. In California, the California Waste Management Board operates a toll-free recycling number (800)952-5545 and refers people to service stations who will accept waste oil free of charge. The toll-free number also provides information on the recycling of other resources such as aluminum, bottles, etc.

b. Some communities have established specific programs for the safe collection and disposal of unwanted household toxics. Generally, the disposal programs involve establishing a specific collection site where residentially generated hazardous waste is accepted from the public during specific time periods. Hazardous waste professionals accept the waste from the public and transport it to a hazardous waste facility for safe disposal. The programs are often sponsored by public works departments, city water departments or City Councils/County Boards of Supervisors. A flier announcing the availabilty of the service in Sacramento, California is found on page 65.

c. In some areas, County agricultural commissioners accept unwanted pesticides from the public. Will <u>your</u> county agricultural commissioner perform this service?

d. A hazardous waste professional could be hired to transport your toxics to a hazardous waste disposal facility, unless you have access to such a facility in your community already. The individual cost for disposal may be high, however.

The best way to solve potential disposal problems is with forethought and preventive action:

- Buy only what you need to get the job done. Buying the economy size may leave you with unwanted portions and a disposal problem.

- Buy safer substitutes when they are available. We will look at using safer substitutes in the next lesson.

<u>EVALUATION</u>:

Read the pre-test questions aloud. This time, students should write the answers on a sheet of paper labelled "Post-Test". Now give the answers to the questions, letting the students grade their papers (pre-test and post-test). By a show of hands, ask how many students increased their score as a result of the lesson. How many students got a perfect score on the post-test? Grading of the students can be accomplished by a post-test given at the end of the entire unit on toxic chemicals. See pages 75-77.

UNSAFE DISPOSAL PRACTICES CAUSE POTENTIAL THREATS TO HEALTH AND THE ENVIRONMENT

People generally dispose of waste by burning it, burying it, storing it, throwing it in the trash, or dumping it down the sink, toilet, storm drain, etc.

The following information relates to potential dangers associated with unsafe disposal practices.

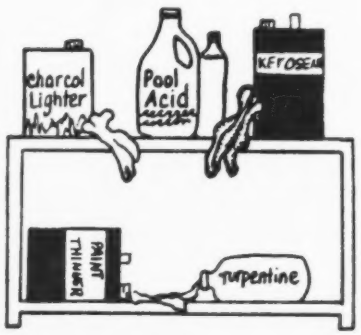
Throwing Toxics in the Trash - In 1982, one disposal firm in San Diego, California reported more than a dozen worker injuries from household chemicals mixed in with trash. In addition, 42 workers sustained injuries in the Los Angeles area under similar circumstances during the previous year. In some cases, workers were blinded or badly burned when chemicals (e.g., muriatic acid used to clean swimming pools) splashed on them from the garbage truck while others were affected by toxic fumes created from the mixing of various wastes in the trash compactor. In addition, throwing toxics in the trash means they eventually end up at the municipal dump which is not designed to contain hazardous wastes.

Burying Waste Oil - Waste oil from vehicles is often directly discharged into rivers or dumped into sewer drains with devastating effects: one part oil to one million parts (ppm) water causes taste and odor problems in drinking water; and fifty to one hundred parts per million can seriously undermine water treatment processes. Burial of oil in the backyard is no more benign: oils can corrode containers and leach through the ground contaminating both soils and ground and surface waters.

The principal pollutant in waste oil is lead. It results from contamination of oil by gasoline transferred to the crankcase during combustion. Lead is a lethal and systemic pollutant which affects the lungs and the nervous system, and which slowly accumulates in the body. Waste oil also contains metals from gasoline, as well as zinc, iron, phosphorous, copper, and magnesium from engine wear. Many of these compounds present in waste oil have toxic effects over long periods of time. As yet, the precise harmful impact of this build-up of sublethal and lethal materials has not been fully assessed.

Throwing Toxics in a Ditch or Curbside - Reports indicate that household pets have died as a result of drinking antifreeze (ethylene glycol) from drainage ditches. Ethylene glycol is a sweet tasting substance and is attractive to animals. Throwing toxics in a ditch or near the curb can cause the chemical to enter a storm drain. Storm drains lead to sewage treatment plants or directly into the environment. Sewage treatment plants are not designed to handle large amounts of hazardous wastes. Some toxics may completely bypass a treatment system and go directly into a connecting waterway.

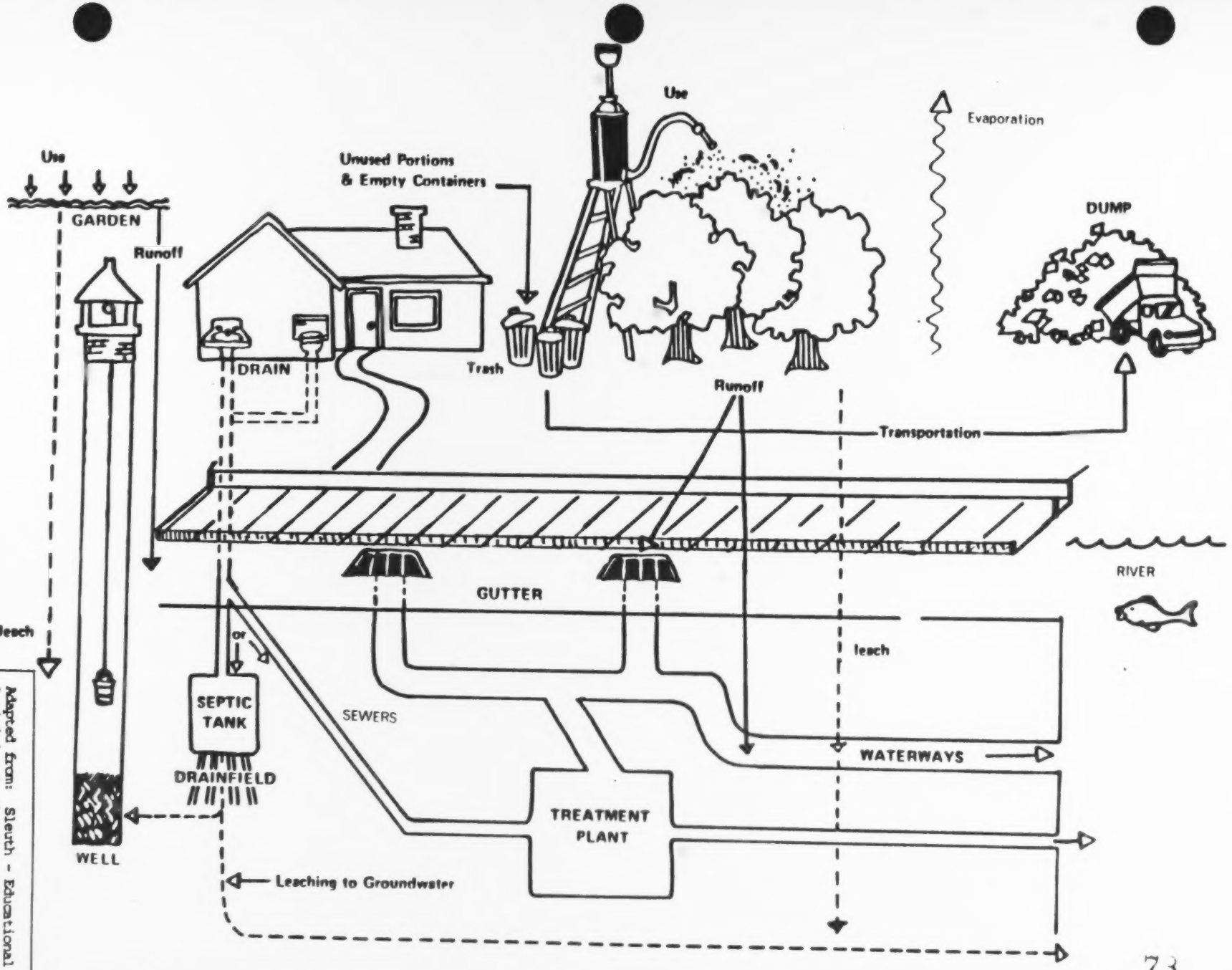
Storing Toxics in the Home - Storing toxics indefinitely can be an invitation for an accident. It provides a greater opportunity for children to be exposed to the product. Excess storage also creates a hazard for firemen who respond to residential fires and can be exposed to a variety of hazardous substances.



Burning/Mixing Hazardous Materials - Some consumer products --aerosol cans, for instance--can explode under high heat. Other products may create a toxic fume through the mixing of incompatible chemicals. The most common example is chlorine bleach and ammonia which, when mixed together, produces toxic chloramine fumes. When housecleaning, people are often affected by mixing chlorine bleach with ammonia products. Mixing chlorine bleach with vinegar, or certain toilet bowl cleaners will produce a toxic gas.

Throwing Toxics in Sewer Systems/Septic Tanks - Sewer systems are not designed to handle hazardous waste. The sewer system operates by having live organisms feed off the bacteria in the sewers. If sufficient amounts of hazardous wastes are introduced to the sewer system (via sinks, tubs, toilets, etc)., the organisms can be killed off, thus sending pollutants into connecting waterways.

Groundwater may be contaminated by the migration of household toxicants in soil. Disposal sites on sandy soil are particularly vulnerable.



Adapted from: Sleuth - Educational Activities On the Disposal of Household Hazardous Waste, METRO, Seattle, WA

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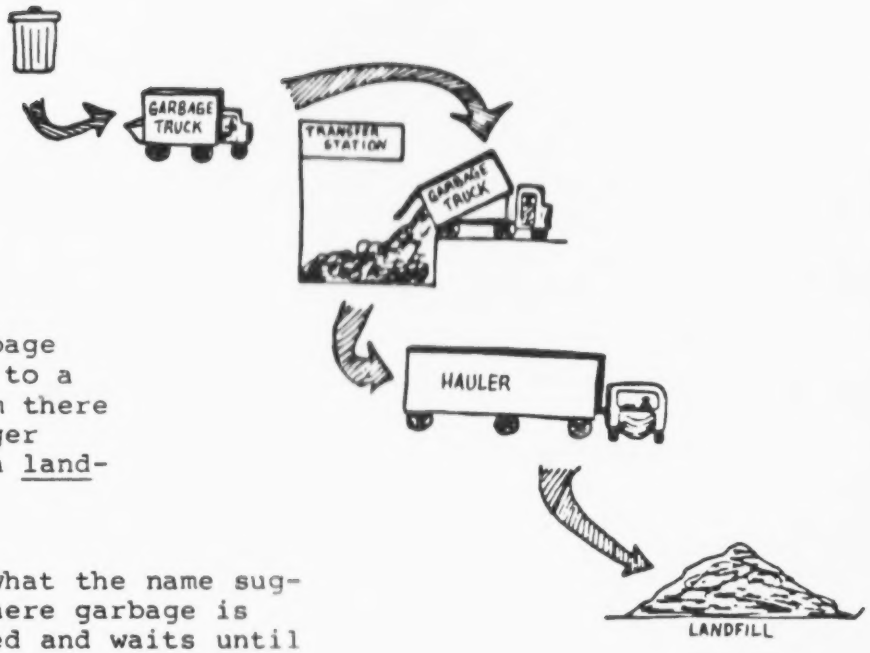
GARBAGE DUMPS AND LANDFILLS

Once you have put your trash in the garbage can, you don't have to think about it much any more. The garbage truck comes by and takes it away every week. But where does it go then?



In some areas, the garbage trucks take your trash to a transfer station. From there it is picked up by larger trucks and carried to a landfill.

A transfer station is what the name suggests; it is a place where garbage is brought in and deposited and waits until it can be taken to its final resting place--the landfill. Some transfer stations have different areas: one spot is for demolition debris, or grass and lawn clippings, and another for household garbage. Some transfer stations and landfills will not accept toxic or otherwise hazardous wastes.

Some transfer stations accept garbage only from commercial hauling trucks over a certain weight and are not open to the public. Citizens who want to dispose of their trash themselves can go to an appropriate transfer station or a landfill.

Adapted from: Sleuth - Educational Activities On the Disposal of Household Hazardous Waste, METRO, Seattle, WA

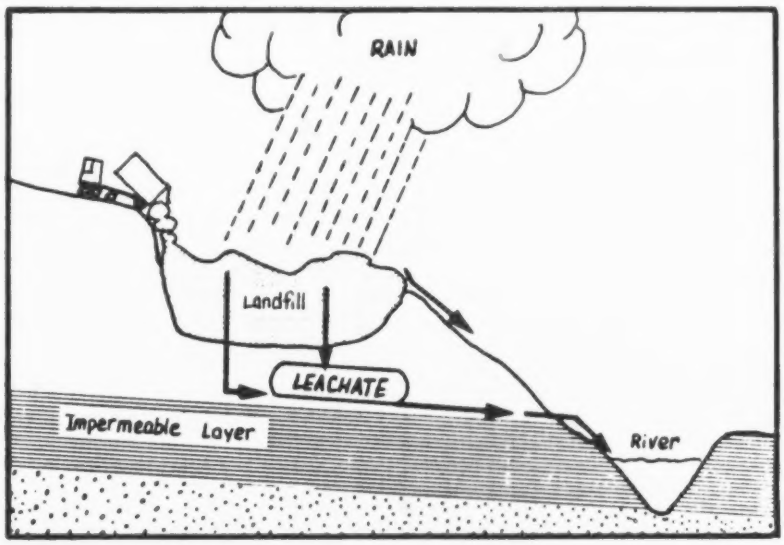
LANDFILLS LEACHATE

Trash in landfills used to be burned to reduce the volume. This produced a relatively non-toxic ash, but sent a lot of very nasty substances into the air.

So they stopped burning the waste, and started compacting* and burying it. Now the problem is leachate.

Pour hot water over coffee grounds. The first bit of water is absorbed. As the grounds get saturated, the water leaches through the grounds, and what you collect in your coffee pot is leachate. So leachate is partly water and partly the chemicals it has picked up on the way.

At the landfill it is the rainwater, and any liquids in the waste, that leach through. Soluble toxic or hazardous materials can be washed down with them. The leachate will go down through the soil until it reaches an impermeable layer (a layer it cannot go through), or it will flow down hill over the surface. Thus there is a potential for contamination of groundwater or waterways.



Agencies responsible for landfills are now having to deal with this problem.

---

*The waste at a landfill is heavily compacted or crushed to approximately 1400-1800 lbs/cubic yard. Compare this with the trash in your garbage can, which is compacted to about 175 lbs/cubic/yard. Because of this compaction, almost any container will break open and its contents will be exposed to the leaching process.

Adapted from: Sleuth - Educational Activities On the Disposal of Household Hazardous Waste, METRO, Seattle, WA

SEWERAGE SYSTEM

When you pour something down the sink or flush it down the toilet, have you ever wondered what happens to it next?

It you don't live too far out in the country, chances are that it goes through the pipes in your building and on into the SEWERS.

The SEWERS are a system of underground pipes that collect liquid waste from each house, hotel, store, office building, factory and so on, and bring it all together into huge pipes called TRUNK LINES.

By the time it gets to the TRUNK LINES you've got a big mess of everybody's mixed waste (called SEWAGE) rushing along.

Just think for a minute of all the appliances and fittings in your home that are connected to the sewers.

Not all that long ago sewage used to be dumped directly into rivers, lakes and oceans. Can you think of some reasons why this might become a problem after a while?

Now most cities and towns have SEWAGE TREATMENT PLANTS to clean the sewage up before discharging it.

Just as with garbage collection, the people who use the sewer system are the ones who pay for it. Bills come in the mail.

There are two types of pollutants that need to be cleaned out of sewage: 1) such things as human excrement and food scraps, and their associated bacteria, which can cause serious human health and environmental problems when discharged in large quantities; and 2) hazardous chemical wastes which can cause serious damage to all kinds of organisms, although the effects may not be immediately apparent.

For some years now, we have recognized and understood the first problem, and have learned how to deal with it. This is why sewage treatment plants were originally built. As far as these kinds of wastes are concerned, our lakes, rivers and beaches are cleaner and healthier today than they were in years past.

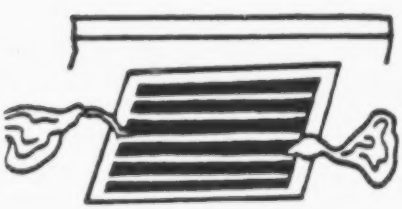
Today we are only starting to recognize and understand the second problem: potential environmental damage from hazardous wastes. There is no doubt that treatment removes or changes to a less harmful form, some of the toxic substances found in sewage. Other toxic substances, however, are not removed and can be discharged into connecting waterways.

Adapted from: Sleuth - Educational Activities On the Disposal of Household Hazardous Waste, METRO, Seattle, WA

WATERWAYS

Did you pour toxic substances in the storm drain? In the ditch? In your backyard? In the driveway? If so, your product has a good chance of getting into local waterways--a stream, river, or lake--because you have put it into your watershed.

A watershed is the area of land which drains rainfall into a particular stream, river, or lake. Small watersheds or drainage basins are usually part of larger watersheds or drainage basins: your creek flows into a larger creek which flows into a lake or river and so on. Now let's figure out where your product went in your watershed.



First, the storm drain. The square metal grates at the sides or curbs of streets are called storm drains or catch basins. When it begins to rain, the first drops soak into the ground, but once the soil is saturated, or if cement is in its place, the rain runs along the surface and is caught in these basins. They drain anything on your driveway, backyard or street into the storm sewer system.

Once there, these "runoff" waters enter pipes which carry them to larger pipes or "trunk lines" buried under the ground. These pipes then take the waters and empty them into the nearest waterway: a creek, river or lake.

In some areas, storm drains go directly into connecting waterways. In other areas, the storm drainpipe joins up with the sanitary sewer pipes and goes to the sewage treatment plant. This is called a combined sewer system.

Next, the ditch or backyard. In some areas there are no storm drains. Once the soil is saturated, the rains run overland to the nearest ditch or gully and downhill towards the nearest waterways. If you disposed of a product--oil in a ditch or a pesticide in your backyard--and it rained very hard the next day, that rain could send your waste one of two ways: overland along the ditches to a waterway, or down into the groundwater.

Adapted from: Sleuth - Educational Activities On the Disposal of Household Hazardous Waste, METRO, Seattle, WA

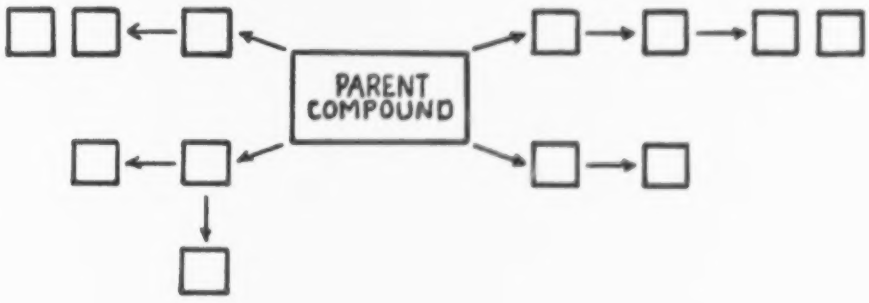
Groundwater, water table, aquifer, artesian well, springs--all are names which describe where water is and what water does underground. What water does underground is very complex. The most important part of the watershed is that about which we usually know the least!

Simply put, water drains or soaks into the ground until it hits a layer of rock that is difficult to penetrate. The water then collects and flows in an area called an aquifer. Some aquifers drain their waters into a lake or stream, below the water line and out of our sight. Other aquifers are enclosed by the layers of rock around them and do not move. Many people drill wells into both kinds of aquifers, those that flow and those that are like pockets. Aquifers around the country are becoming contaminated at an alarming rate, and drinking water supplies are threatened. We all need more evidence about the nature of our aquifers and the routes that carry toxic or hazardous chemicals to them.

Adapted from: Sleuth - Educational Activities On the Disposal of Household Hazardous Waste, METRO, Seattle, WA

INFORMATION SHEET ON DEGRADATION/PERSISTENCE

DEGRADATION means breaking down chemicals into simpler products. The original substance is called the PARENT COMPOUND. The parent compound breaks down into substances called degradation products.



In some cases the degradation products may be more toxic than the parent compound.

Some chemicals last in the environment a long time. PERSISTENCE is a measure of how long the chemical stays around in the environment in its original form--before any degradation occurs.

Scientists have chosen to measure persistence according to the disappearance of the parent compound only. In some cases, the degradation product may be more persistent than the parent compound. Chemicals that persist are likely to accumulate in the soil and water if they are constantly reapplied.

Adapted from: Sleuth - Educational Activities On the Disposal of Household Hazardous Waste, METRO, Seattle, WA

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INFORMATION SHEET ON BIOACCUMULATION AND BIOCONCENTRATION

Bioaccumulation is accumulation inside a living creature. Bioaccumulation happens when a chemical enters an organism faster than it can be metabolized or excreted. The substance is simply stored in some part of the body--usually fatty tissues, but occasionally other places like bones.

Bioaccumulation is something that happens to a living organism over the course of its lifetime. For example, all of us are gradually accumulating cadmium and lead in our bodies as we are exposed to them every day. Your body will contain quite a bit more of them when you are old than it did when you were born.

Bioconcentration refers to the concentrating of a particular substance in the body as it progresses "up the food chain".

Here is an imaginary story to help you understand bioconcenration.

A drum containing a persistent chemical called Xantobil leaks and some of it runs off into a stream. Here it is absorbed by small water insects. No big deal for the insects--each one of them only has a tiny amount (1 "part") of the substance inside them, and it does not harm them. Along comes some hungry fish. Ten little insects will make a good breakfast for each of them. Now each of the fish have 10 parts of the substance. (Remember, it is not broken down easily in the fish's body, so it will be stored.) Perhaps even the fish will suffer no ill effects from these ten parts of Xantobil.

Then a larger fish passes by and eats three of the smaller fish, each containing 10 parts of Xantobil. Now the larger fish has 30 parts in her body. She is at the top of the food chain in this story. And you can see how the concentration of Xantobil increased from one part in the insects to thirty parts in the larger fish.

This is bioconcentration. And now we are in trouble, because 30 parts of Xantobil may make the larger fish sick, cause her to not reproduce, or even kill her.

What could possibly happen if a human ate the larger fish?

WORKSHEET ON TOXICS

Choose five of the following issue areas. After choosing an issue area, pick Side A or Side B to discuss. On a separate sheet of paper, write why you chose that position and what additional information, if any, you would want that might support your position.

ISSUE AREA I

SIDE A	Health and safety data on any chemical should be available for any member of the public who cares to look at it.
SIDE B	Manufacturers should be allowed to keep health and safety data secret.

ISSUE AREA II

SIDE A	Chemical companies should pay for health and safety tests of their chemicals.
SIDE B	Health and safety tests should be financed by public funds.

ISSUE AREA III

SIDE A	States or communities should be able to set disposal standards that are stricter than those set by the federal government.
SIDE B	States or communities should not be able to set standards that are stricter than those set by the federal government.

ISSUE AREA IV

SIDE A	We should try to limit our consumption of synthetic products--for example, nylon and plastic--that tend to generate toxic or hazardous wastes during their manufacture.
SIDE B	We should take full advantage of the benefits of modern technology and enjoy all products, hoping that a safe means for disposal of all toxic wastes will be developed at some point.

ISSUE AREA V

SIDE A	We should ship our hazardous wastes to other countries if they are willing to receive them.
SIDE B	We should not ship our hazardous wastes to other countries in lieu of finding safe technology for their disposal.

ISSUE AREA VI

SIDE A	The ocean is large and resilient, an ideal place for diluting hazardous wastes, and should be used for dumping.
SIDE B	Ocean dumping of hazardous wastes should not be used.

ISSUE AREA VII

SIDE A	The federal government should be able to determine where hazardous waste dumps should be located.
SIDE B	Local communities should be able to determine whether or not they want a hazardous waste disposal facility in their community.

ISSUE AREA VIII

SIDE A	We should keep local people employed with jobs--such as cutting grass and weeds on roadsides, weeding and landscaping public gardens, etc.,--rather than using dangerous pesticides.
SIDE B	Pesticides are convenient and very effective and should be used instead of alternative pest control measures.

ISSUE AREA IX

SIDE A	Household quantities of wastes are small enough that they should not be regulated like industrial wastes.
SIDE B	Household quantities of toxic substances should be regulated the same as industrial quantities. The same chemicals used by households are used by industries who manufacture or use the product.

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Limited time only!

FREE DISPOSAL OF HOUSEHOLD TOXICS

UNSAFE USE AND DISPOSAL OF TOXIC SUBSTANCES FOUND IN MANY HOME AND GARDEN PRODUCTS CAN INJURE HUMANS AND DAMAGE THE ENVIRONMENT. NOW IS THE TIME TO RID YOUR HOUSE OF OLD AND UNWANTED PRODUCTS. USE THIS FREE COLLECTION SERVICE AND KEEP YOUR ENVIRONMENT SAFE. FOR MORE INFORMATION CALL SACRAMENTO COUNTY ENVIRONMENTAL HEALTH DEPARTMENT AT:

366-2109

WHERE AND WHEN

DATE: JUNE 2, 9
TIME: 9:00 a.m. - 1:00 p.m.
PLACE: 21st & W Streets
(under the freeway)

DATE: JUNE 16, 23
TIME: 9:00 a.m. - 1:00 p.m.
PLACE: El Camino High School
El Camino/Eastern
(parking lot)

State law requires that each product be packaged in a separate container that does not leak and does not exceed 10 pounds of solid or 1 gallon of liquid material. Keep materials away from passengers during transport. Radioactive materials, explosives (e.g., ammunition) and unidentifiable wastes will not be accepted.

JOIN US AT THE KICK-OFF EVENT

(Program begins at 10:00 a.m., June 2nd, 21st and W Streets.
Collection site opens at 9:00 a.m.)

DEBRA LYNN DADD Author, A Consumer Guide for the Chemically Sensitive. Debra will discuss chemical hazards in the home and the use of safer alternatives to products containing toxic substances.

JUDY ALSOP Coordinator, UC Davis Regional Poison Control Center. Judy will discuss medical complications and other problems resulting from inadequate labeling on products.

JANIS HEPLE Sacramento Toxics Alliance and **ROBERT SHIREMAN** California Public Interest Research Group. Janis and Robert will discuss the health hazards of hobby supplies.

BRUCE RISLEY/ED LEITCH American Environmental Management Corporation. Bruce and Ed will demonstrate problems associated with the mixing of incompatible products.

F R E E I N F O R M A T I O N A L M A T E R I A L S

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Project Coordination: Golden Empire Health Planning Center, 2100 21st St., Sacramento, CA 95818, (916) 731-5050.

PRE-TEST/POST-TEST

Learning Activity Four

TRUE OR FALSE

F 1. Bioaccumulation refers to toxics accumulating in soil.

T 2. The principal pollutant in waste oil is lead which can slowly accumulate in the body.

T 3. Household toxics emptied down a bathroom sink can end up at a sewage treatment plant.

F 4. Chemicals disappear from the soil within a few hours after they are applied.

F 5. Degradation refers to chemical substances left in the ash when something was burned.

T 6. One part oil to one million parts of water can cause a taste and odor problem in drinking water.

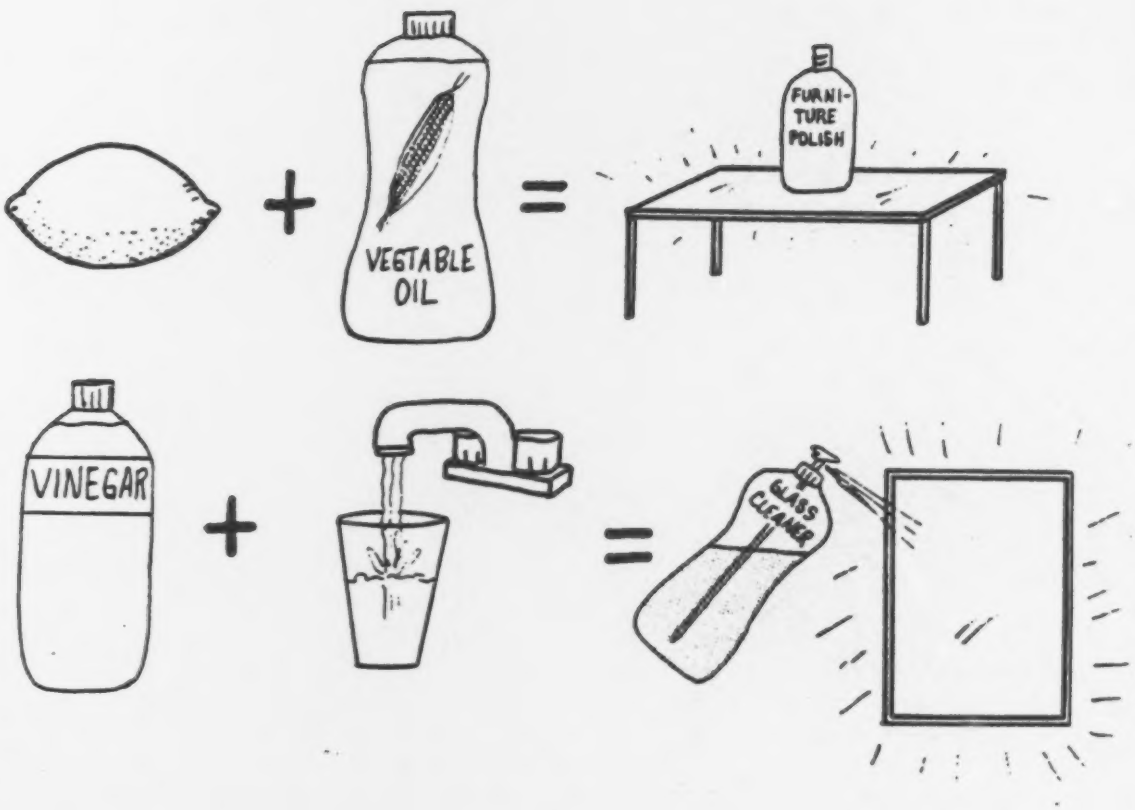
T 7. Ethylene glycol is a sweet tasting substance found in antifreeze that is attractive to pets.

T 8. Refuse workers have been seriously injured when unknowingly collecting trash containing toxic chemicals from the home.

F 9. Sewage treatment plants were designed to dispose of hazardous wastes.

T 10. Indiscriminate land disposal of toxics can eventually lead to contamination of water supplies--especially if the soil has a sandy texture to it.

LEARNING ACTIVITY FIVE



CONCEPT IV

LEARNING ACTIVITY FIVE

PURPOSE:

To make the student aware of the existence of safer substitutes for toxic household products.

OBJECTIVE:

The student will be able to:

1. identify what influences people to use products containing toxic substances; and
2. identify safer substitutes for using toxic substances.

MATERIALS:

1. Magazines with ads of products containing potentially hazardous substances.
2. Household Products Survey Sheet(s) that were handed out in Learning Activity III, pages 42-45. Teacher may want to have extra copies available for those students who misplaced their original copy.
3. Alternatives to Toxic Products, page 71-72, one per student or group.
4. Worksheet for Analysis of Advertisement, page 73, one per student or group.
5. Chalkboard or overhead projector.
6. Scissors.
7. Bulletin board (optional).

TIME: 50 minutes.

TEACHING PROCEDURES:

1. OPTIONAL: Ask students what they have learned in the past four lessons. Have a one or two minute recap. Write the students' answers on the chalkboard.

2. Orally give pre-test, page 74. Have students write the answers to the pre-test on a piece of notebook paper labelled pre-test. Do not discuss the answers at this time. Tell students to look for the answers as the lesson is presented. Have students keep the pre-test for use in the post-test. (See evaluation, page 70.)

3. Suggest to the students that much of our lifestyle in the 1980's has been built around the use of easy-to-use convenience products. As we have seen, many of these products contain some potentially hazardous ingredients.

4. Ask, "What influences people to start using these products?". (Write the question and answers on the board.)

   Possible Answers: Parents have used them; relatives and friends use and/or recommend them; see it in stores; use at work; exposed to advertisements in magazines, on radio, and/or television.

5. Ask, "What reasons do advertisers give for using some of these products?". (Write the question and answers on the board.)

   Possible Answers: Convenient; quick; "new and improved"; effective; easy; social acceptance (stops ring around the collar, stops itchy dandruff, smells good, etc.)

6. Say, "Let's look at some of these advertisements.". (Activity to be performed alone or in groups).

   Hand out magazines, scissors, glue, Safer Alternatives sheets (pages 71-72), and worksheet (page 73). Also, instruct students to refer to the household products survey sheets that was given to them in Learning Activity III. Direct them to read the last column. Relying on information learned from previous lessons and the "What You Can Do" column of the survey sheets, have the students complete the following activity. Allow 20 minutes.

   a. Find one ad which has a potentially harmful effect.

   b. Cut out the ad.

   c. Paste it on the worksheet, page 73.

   d. Write under the advertisement:

      - the potential harm;
      - reason the ad writer is giving for persuading you to buy the product (refer to chalkboard for assistance);

- how you think one can avoid or reduce the potential hazards associated with this product (when you use it); and

- the name of a less toxic substitute, if possible.

7. When time is up, have each student (or group) pin their work on a bulletin board or place it somewhere around the classroom. Have the students discuss their posters by:

   a. telling the potential hazards associated with the product;
   b. identifying the advertising gimmick (i.e, why should you buy it, what will the product do, etc.);
   c. stating how potential harm can be reduced when using the product; and
   d. identifying a safer substitute, if possible.

   Encourage participation from the rest of the class.

8. Ask students if they think consumers can influence what products are manufactured.

   Ask students to give examples of how consumer "buying power" influenced the manufacture of products.

   One of the most obvious examples involves the health food industry. Once a small time operation, their products are now in competition with large industries who are now profiting by marketing products they once refused to manufacture. Not too long ago, preservatives in bread was the norm, stoneground whole wheat was virtually unheard of; and herbal teas were self-made concoctions. Today, preservative free bread, wholewheat products and herbal teas are packaged and sold by leading food industries who recognized the growing demand for such foods.

   If we want less toxic products placed on the market and if we want to know the potential acute and chronic health effects associated with the ingredients used in consumer products, we can:

   a. notify the manufacturer and elected officials of our interest and encourage others to do the same; and

   b. start buying less toxic products (if a market is created, manufacturers will respond).

   If we want to continue using products containing toxic chemicals, we should use them with utmost care.

EVALUATION:

Read the pre-test questions out loud. This time, students will write the answers on a sheet of paper labelled "Post-Test". Now give the answers to the questions letting the students grade their papers (pre-test and post-test). By a show of hands, ask how many students increased their score as a result of the lesson. How many students got a perfect score on the post-test?

Grading of the students can be accomplished by a post-test given at the end of the entire unit on toxic chemicals. See pages 75-77.

SAFER ALTERNATIVES FOR TOXIC PRODUCTS

The following is a list of safer substitutes for some household toxics.

Aerosol Sprays

- Use pump-type sprays whenever possible to replace aerosols (e.g., hair sprays)
- Use fresh flowers or sachets of dried petals mixed with spices instead of room sprays

Ant Control

- Sprinkle cream of tartar in front of the ant's path. Ants will not cross over. Cream of tartar is a substance used in baking.

Bug Spray

- Screens on windows and doors
- Brewers yeast tablets taken daily give the skin a scent that mosquitos seem to avoid

Chemical Fertilizers

- Compost

Copper Cleaner

- Pour vinegar and salt over copper and rub

Deodorizers/Air Fresheners

- Open windows or use exhaust fans as a natural air freshener
- A dish of hot vinegar can get rid of fish odors
- Baking soda placed in the refrigerator reduces odors
- Fresh cut flowers or dried flower petals and spices can add a nice scent to a room--as will potpourri or cinnamon and cloves in boiling water.

Detergents (Laundry & Dishwashing)

- Replace detergents with soaps, relatively "non-toxic" and bio-degradeable. (To wash out residue from detergents, prewash in washing soda.)

Drain Openers

- Pour boiling water down the drain
- Plumber's helper (plunger)
- Plumber's snake

Floor Cleaners

- Soap and Water
- Washing Soda and Water

Furniture Polish

- Soft Cloth and Mayonnaise
- 1 Part Lemon Juice and 2 Parts Vegetable Oil

General Cleaners (All Purpose Cleaner)

- 3 TBSP. washing soda in one quart of warm water
- Baking soda with a small amount of water

Glass and Window Cleaners

- Cornstarch and Water
- 1/2 cup white vinegar and one gallon warm water. Wipe with newspapers, if desired.
- Lemon juice and dry with cloth

Oven Cleaners

- 3 TBSP. of washing soda with one quart of warm water
- Place liners in oven to catch any drips during baking
- Sprinkle salt on spills when they are warm and then scrub
- Rub gently with steel wool

Paint

- Water based paints are less toxic than metal based. After using it, no solvent is necessary to clean up.

Rat Poison

- Put a screen over drains
- Use mechanical-snap mouse traps

Scouring Powder

- Dip damp cloth in baking soda and rub
- Steel wool

Snail/Slug Bait

- Place a shallow pan with beer in infested area

- Overturn claypots. The snails will take shelter in them during the sunny days and they can be collected and removed.

Tomato Hornworm and Several Species of Moth in Caterpillar Stage

- Dipel. This substance causes the worm to die of disease. It only effects very specific bugs. It is considered not to be toxic to humans, mammals, birds or fish.

Name _____
Date _____ Period _____

WORKSHEET FOR ANALYSIS OF ADVERTISEMENT

(Paste Advertisement Here)

Potential harm of product

Reason for persuading you to buy the product

How can one avoid or reduce the potential hazards associated with this product when it is used?

What is a less toxic substitute?

PRE-TEST/POST-TEST

Learning Activity Five

MATCHING

a. pump sprays	d. vinegar
b. vegetable oil	e. aerosols
c. cream of tartar	f. baking soda

_c_ 1. Keeps ants from coming into a room.

_f_ 2. Good all-purpose cleaner.

_b_ 3. Substitute for furniture polish.

TRUE OR FALSE

_F_ 4. Aerosol sprays are convenient and safe to use.

_F_ 5. Phosphate detergents help our rivers.

_F_ 6. Air fresheners remove room odors.

_T_ 7. Consumers can influence the type of products that are manufactured.

_T_ 8. Advertisements influence consumer product selection.

_T_ 9. Most solvents dissolve skin oils.

_F_ 10. Soft contact lenses keep toxic fumes away from the eyes.

UNIT POST TEST

UNIT POST TEST

(Household Toxics: Chemical Hazards in the Home)

1. 1. What is a toxic chemical? _____

_____

2. Give three examples of products containing toxic chemicals.

_____

_____

_____

3. Why should we wear rubber gloves when handling household toxicants? _____

_____

4. Name three ways toxics enter the body? _____

_____

5. Why are aerosol sprays hazardous? _____

_____

6. Name two potentially hazardous household products and list safer substitutes for them. _____

_____

7. What is a teratogen? _____

_____

8. What is the purpose for using solvents (i.e., what do they do?) _____

_____

9. In the event of a poisoning, what should you always do?

_____

10. What federal law establishes labeling requirements for consumer products containing hazardous ingredients (excluding pesticides)? _____

_____

11. Why are consumers often confused about the ingredients contained in the products they buy and use? _____

_____

12. Explain what is meant by acute exposure. _____

_____

13. Explain what is meant by chronic exposure. _____

_____

14. When using products containing toxic chemicals, how can we reduce our exposure to the chemical. List 3 ways.

_____

_____

_____

15. List two things that influence people to buy certain products. _____

_____

Complete the following statements regarding what to do in an emergency involving a poisoning:

16. Remove _____

17. Call _____

18. Don't Rely _____

19. Bring _____

20. Use _____

TRUE OF FALSE

____ 21. Swallowed insecticides should not be vomited.

____ 22. Swallowed acids should be vomited.

____ 23. Soft contact lenses protect the eye from toxic chemicals.

____ 24. One of the best ways to get people to vomit is to continually give them salt in warm water until they vomit.

____ 25. HSA stands for the Health Safety Act.

____ 26. There is no federal law that requires manufacturers to test their products for safety before being placed in the market place.

____ 27. "Grease Cutter" found on a label would be a vague term.

____ 28. The term "inert" applies to ingredients which actually do what the product is intended to do.

____ 29. "Active" ingredients usually make up the major portion of a product.

____ 30. Reactions to a short time of exposure to toxic chemicals are called "chronic" effects.

____ 31. One open window is not considered adequate ventilation when a label says to use the product in a "well ventilated" area.

____ 32. A person should use aerosols as much as possible.

____ 33. Spray cans and other flammables should be stored in a cool place.

____ 34. A good rule of thumb is to double the dose suggested on the label of a pesticide.

____ 35. Buying the "economy size" of most poisons makes good sense.

____ 36. If ingredients do not appear on the product label, we can assume the product does not contain toxic chemicals.

____ 37. The best way to dispose of household toxics is in the trash.

____ 38. Bioaccumulation is what happens when you go from one organism to another "up the food chain".

____ 39. Parent compound refers to the original substance before degradation.

____ 40. Persistent chemicals are not likely to stay in the soil for more than a few days.

Teacher Answer Sheet

UNIT POST TEST

1. What is a toxic chemical? Something that can cause injury, illness, or death to living organisms; a poison.

2. Give three examples of products containing toxic chemicals.
   Accept all reasonable answers.

3. Why should we wear rubber gloves when handling household toxicants? To prevent chemicals from being absorbed by the body through the skin.

4. Name three ways toxics enter the body?
   Inhalation, Ingestion, Skin Absorption

5. Why are aerosol sprays hazardous? 1) If placed near extreme heat, they can explode; or 2) They release particles in the air that can be inhaled into the lungs and absorbed in the bloodstream. Accept either answer or any resonable responses.

6. Name two potentially hazardous household products and list safer substitutes for them. Accept all reasonable answers.

7. What is a teratogen? A substance that changes the baby as it is developing inside the mother.

8. What is the purpose for using solvents (i.e., what do they do?
   They are degreasers, they dissolve things.

9. In the event of a poisoning, what should you always do?
   Call the Poison Control Center or a medical professional.

10. What federal law establishes labeling requirements for consumer products containing hazardous ingredients (excluding pesticides)?
    Hazardous Substances Act

11. Why are consumers often confused about the ingredients contained in the products they buy and use? Vague terms used; the same chemical may be listed in different products by different names.

12. Explain what is meant by acute exposure. A single or very brief exposure.

13. Explain what is meant by chronic exposure. Occurring over a period of time.

14. When using products containing toxic chemicals, how can we reduce our exposure to the chemical. List 3 ways.

Accept all reasonable answers.

15. List two things that influence people to buy certain products. Accept all reasonable answers.

Complete the following statements regarding what to do in an emergency involving a poisoning:

16. Remove poison from contact with the victim.

17. Call a medical professional for advice.

18. Don't Rely solely on antidotes.

19. Bring vomitus (if any) and poison container to the hospital if the person must go to the emergency room.

10. Use syrup of ipecac only on the advice of a medical professional.

TRUE OF FALSE

F 21. Swallowed insecticides should not be vomited.

F 22. Swallowed acids should be vomited.

F 23. Soft contact lenses protect the eyes from toxic chemicals.

F 24. One of the best ways to get people to vomit is to repeatedly give them salt in warm water.

F 25. HSA stands for Health Safety Act.

T 26. There is no federal law that requires manufacturers to test their products for safety before being placed in the market place.

T 27. "Grease Cutter" found on a label would be a vague term.

F 28. The term "inert" applies to ingredients which actually do what the product is intended to do.

F 29. "Active" ingredients make up the major portion of a product.

F 30. Reactions to a short time of exposure to toxic chemicals are called "chronic" effects.

T 31. One open window is not considered adequate ventilation when a label says to use the product in a "well ventilated" area.

F 32. A person should use aerosols as much as possible.

T 33. Spray cans and other flammables should be stored in a cool place.

F 34. Doubling the amounts called for on the product label will increase the effectiveness of the product.

F 35. Buying the "economy size" of most poisons makes good sense.

F 36. If ingredients do not appear on the product label, we can assume the product does not contain toxic chemicals.

F 37. The best way to dispose of household toxics is in the trash.

F 38. Bioaccumulation is what happens when you go from one organism to another "up the food chain".

T 39. Parent compound refers to the original substance before degradation.

F 40. Persistent chemicals are not likely to stay in the soil for more than a few days.

APPENDICES

RESOURCE MATERIALS

NOTE: Most federal documents (including those from the Consumer Product Safety Commission) purchased from the Government Printing Office, Washington, DC 20402. Government documents (current as well as those out of print) may also be found in federal depositories. A list of those depositories follows this section. Inquire for availability and current price list for all the publications listed below.

Bury It In the Back: Hazardous Waste Disposal of Used Automobile Oil ($2.50 including postage)

A report on the effects of improper disposal of waste oil. The report focuses on the do-it-yourself oil changer and the retail outlets where the automotive oil is bought.

Available from:
MASSPIRG Education Fund/Publications
37 Temple Place
Boston, MA 02111
(617)423-1796

The Case of the Wild House Mouse by Kathleen Letcher Cowles (Curriculum)

Leads students to an understanding of non-toxic mouse control methods. Includes take-home booklets, do-it-yourselves bulletin board, and various activities. Targeted for elementary schools.

Available from:*
Kathleen Letcher Cowles
John Muir Institute
29 W. High Street (WO)
Morgantown, WV 26505
(304)296-2855

*This material was available on a limited basis and supplies may be exhausted. A re-print is expected. Contact the above address for more information.

The Class Project by the National Wildlife Federation. ($5.00) (Curriculum)
Loose-leaf notebook with background information and project ideas. Posters on energy use, environmental issues, forest/watershed management, hazardous substances, wetlands, and wildlife habitat management are included. The Class Project is designed to help teachers make environmental education part of the junior high or middle school curriculum. The program encourages classes to initiate environmental projects in their localities and be recognized as part of a nationwide network of Conservation Classrooms.

Available from:
John Stone, Director of Education
National Wildlife Federation
1717 Massachusetts Ave., NW
Washington, DC 20036
(202)797-6800

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Cockroach Clean-Up Tour by Kathleen Letcher Cowles (Curriculum)

Teaches the basics of safe cockroach management with humor and facts. Contains eight complete lesson plans, colorful poster set, take home booklets and filmstrip/cassette tape. Targeted for elementary schools.

Available from:*
Kathleen Letcher Clowles
John Muir Institute
29 W. High Street (WO)
Morgantown, WV 26505
(304)296-2855

*This material was available on a limited basis and supplies may be exhausted. A reprint is expected. Contact the above for more information.

A Consumer Guide for the Chemically Sensitive by Debra Lynn Dadd and Alan S. Levin, M.D. ($18.00 including postage)

Prepared especially for individuals with chemical sensitivities, the book lists alternatives for those who wish to lessen their exposure to potentially toxic chemicals in air, water, food, workplace, and the home environment.

Available from:
Non-Toxic Lifestyles
PO Box 210019
San Francisco, CA 94121
(415) 543-2985

The Door to Home Safety. (A CPSC Curriculum Publication)

Developed for use by educators of students in grades 7-9, this booklet offers a program intended to increase the awareness of young people, their teachers, and their parents to product safety, accident causation, and major hazards associated with products in the home. The activities are particularly adaptable to an interdisciplinary approach, used in social studies, family education, home economics, industrial arts, and consumer affairs classes.

Available from:
Check the Federal depository in your area for a reference copy or contact your regional Consumer Product Safety Commission (CPSC) office. Addresses for both agencies follow this section of the appendices.

The EE Guides (Each volume is $7.00; complete set of 4 for $25.00) (Curriculum)

Available for grades K-3, 4-6, 7-9, 10-12.

Contains a complete program of ready to use activities in each of four areas: natural environment, built environment, social institutions and decision making, and energy and environmental resource management. Outlines a planning process that can be used for developing an interdisciplinary program. Developed by educators throughout California. Goals for student outcomes include assuming responsibility for the environment and adapting personal lifestyles to be more harmonious with the environment.

Available from:
Alameda County Office of Education
224 West Winton Ave.
Hayward, CA 94544

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Groundwater Quality Protection in Oakland County: A Sourcebook for Teachers by East Michigan Environmental Action Council ($10 including postage) (Curriculum)

Intended as a reference source on groundwater quality protection, this manual addresses the water cycle, characteristics and uses of groundwater, and dangers of household hazardous materials from a safety and groundwater hazard standpoint. Includes "hands on" projects directed at junior high and middle school science and social studies teachers.

Available from:
East Michigan Environmental Action Council
One Northfield Plaza
Troy, MI 48098
(313)879-6040

The Green Box ($40.00) (Curriculum)

Set of activity cards for use in upper elementary grades. Environmental themes focus on environmental knowledge and present attitudes.

Available from:
Humboldt County Superintendent of Schools
901 Myrtle Ave.
Eureka, CA 95501

A Guide to Safe Use and Disposal of Hazardous Household Products. ($4.25 including postage)

Summarizes the hazards, substitutes, and recommended disposal methods for household hazardous wastes.

Available from:
Metropolitan Planning Council
110 Fremont Street
Boston, MA 02108

A Guide to Some Hazardous Substances that May be Found in the School Science Laboratory.

Supplement to the National Institute on Occupational Safety and Health (NIOSH) Manual of Safety and Health Hazards in the School Science Laboratory. Purpose is to identify certain potentially hazardous substances in use in many school laboratories and to provide a concise inventory to enable science instructors to take the initiative in providing for proper storage, handling, use, and removal of extremely hazardous materials. The document provides lists of explosives, carcinogens, highly toxic, and/or corrosive or irritant chemicals.

Available from:
Ken Giles
U.S. Consumer Product Safety Commission
5401 Westbard Avenue
Bethesda, MD 20207
(301)492-6580

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A Guide to Teaching Poison Prevention in Kindergartens and Primary Grades. (Stock No. 052-003-00257-4) (A CPSC Curriculum Publication) ($4.75)

Book contains a wide selection of games, pictures, worksheets, and activities designed to assist in teaching poison prevention to children.

Available from:
Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

The Household Pollutants Guide by Albert Fritsch, editor. ($4.75 including postage)

Provides detailed information on a variety of household products, including the health effects of such products. Published by the Center for Science in the Public Interest, the book is an action manual wherein conscientious homemakers may detect toxics in the home and use substitutes for harmful hazardous materials. The book is a first step in exposing and cleaning up the household environment.

Available from:
Environmental Action Foundation
724 Dupont Circle Bldg.
Washington, DC 20036
(202)296-7570

The Inseparable Parts: A Catalog of Environmental Education Programs in Washington State.

Lists the availability of various programs designed to prepare young people to be informed citizens and better able to participate in the process of decision-making about natural resources.

Available from:
Washington State Office of Environmental Education
2000 N.E. Perkins Way
Seattle, WA 98155
(206)365-0433

Listing of Educational Materials for Use by Schools, October 1979. (Stock No. 1979-0 620-225/3851 Region 3-1) (A CPSC Publication)

Lists materials and publications developed especially for use by educators in teaching product safety to youngsters.

Available from:
At the time of this printing, the book was unavailable from the U.S. Government Printing Office or the U.S. Consumer Product Safety Commission. Check the Federal depository in your area for a reference copy or contact your regional CPSC office.

The Natural Formula Book for Home and Yard edited by Dan Wallace. ($17.95 including postage)

Contains over 400 natural formulas to help you live healthier, safer, and more economically independent. Also includes recipes for all-natural convenience foods. Formulas are given for all purpose cleaners, laundry needs, natural hygiene and beauty products, garden products, and a number of other areas.

Available from:
Rodale Press
33 East Minor Street
Emmaus, PA 18049
(215)967-5171

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Perils of PIP - Preventing Poisoning. (Stock No. 052-011-00176-6) (A CPSC Publication)

Colorfully illustrated comic book about an elephant who teaches poison prevention.

Available from:
Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402

Poison Awareness: A Discussion Leader's Guide. (A CPSC Publication)

A tool kit of ideas, activities, and techniques for conducting a group presentation on poison prevention, particularly on the use, storage, and disposal of potential poisons.

Available from:
At the time of this writing, the book was unavailable from the U.S. Government Printing Office or the U.S. Consumer Product Safety Commission. Check the Federal depository in your area for a reference copy or contact your regional CPSC office.

Poison Awareness: A Resource Book for Teachers, Grades 7-9. (Stock No. 052-011-00201-1) (A CPSC Curriculum Publication)

Activities and guidelines for teaching poison prevention, particularly the use, storage and disposal of four types of potential poisons. Designed to help students make their homes safer for younger siblings and increase parental awareness about poisonproofing the home.

Available from:
At the time of this printing, the book was unavailable from the U.S. Government Printing Office or the U.S. Consumer Product Safety Commission. Check the Federal depository in your area for a reference copy or contact your regional CPSC office.

Poison Palettes: A Study of Toxic Art Supplies in Massachusetts Schools. ($3.00 including postage)

A survey was conducted of 21 Massachusetts school districts to determine what art and craft supplies are being purchased for use by children. The supplies were then researched for the ingredient listings. As a result, it became clear that demonstrably hazardous substances, including possible carcinogens, were being ordered for use by students. Some of the most dangerous products were used in elementary schools. The report lists some potentially hazardous products and also offers recommendations on a number of issues that include product labeling, banning dangerous items from schools and teacher training.

Available from:
MASSPIRG Education Fund/Publications
37 Temple Place
Boston, MA 02111
(617)423-1796

Poison Prevention Student Readings No. 6-S. (A CPSC Curriculum Publication) (Stock No. 052-011-00198)

Information adapted from Consumer Product Safety Commission fact sheets and other publications. Easy to read information on potential hazards of home and garden products and medicines.

Available from:
Contact the U.S. Consumer Product Safety Commission or your regional CPSC office for the availability of this publication. Also check the Federal depository. Telephone numbers and addresses for both agencies follow this Resource section.

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Poison Prevention Teachers Guide No. 6-T. (A CPSC Curriculum Publication)

Activities designed for use in 5th and 6th grades. The purpose of the learning unit is to give students basic information on poison prevention (relating to potentially hazardous substances) to keep them and their families safe.

Available from:
Contact the U.S. Consumer Product Safety Commission or your regional CPSC office for the availability of this publication. Also check the Federal depository. Telephone numbers and addresses for both agencies follow this Resource section.

Poison Safety - It's No Accident (A CPSC Curriculum Publication)

A month by month planning guide for teachers of grades 7-9.

Available from:
At the time of this writing, the book was unavailable from the U.S. Government Printing Office or the U.S. Consumer Product Safety Commission. Check the Federal depository in your area for a reference copy or contact your regional CPSC office. Telephone numbers and addresses for both agencies follow this Resource section.

The Product Safety Book by Stephen Brobeck and Anne C. Averyt ($9.95 including postage and handling)

Provides information on hazardous products that can help consumers avoid related injuries and expenses. Its 700 entries specify the risks of using different types of products and the potential hazards posed by some 200 separate product models.

Available from:
The Consumer Federation of America
Department EPD
1314 Fourteenth St., NW
Washington, DC 20005

Project Learning Tree. (Curriculum)

Project Learning Tree is an environmental education project jointly sponsored by the Western Regional Environmental Education Council and the American Forest Institute. Project Learning Tree offers an opportunity for educators and students to "step into the forest", thereby developing awareness, knowledge, and skills related to understanding of renewable and nonrenewable resources on a finite planet.

Available from:
The American Forest Institute, Inc.
1619 Massachusetts Avenue, NW
Washington, DC 20036

Project Wild (Available free upon completion of an in-service training) (Curriculum)

Materials consist of two activity guides (one for elementary schools and one for secondary schools) containing hands-on activities relating to wildlife and keyed to basic school subjects.

Available from:
Western Regional Environmental Education Council
Salina Star Route
Boulder, CO 80302
(303)444-2390
Attn: Dr. Cheryl Charles

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Values Activities in Environmental Education. (Curriculum)

Contains a variety of environmentally related learning activities taken from many sources. The activities are for elementary, junior high and high school levels. The activities do not necessarily relate to household hazardous substances.

Available from:
ERIC Clearinghouse for Science, Mathematics and Environmental Education
The Ohio State University College of Education and Natural Resources
1200 Chambers Road, Third Floor
Columbus, OH 43212

Virginia Commonwealth University - Toxics Curricula for Middle Schools. (Curriculum)

The curricula is currently in the review stage.

For more information write:
Gerald C. Llewellyn, Ph.D.
Virginia Commonwealth University, Department of Biology
College of Humanities and Sciences
816 Park Avenue
Richmond, VA 23284
(804)257-1562

Wizard of Waste by SWRL Education Research and Development under contract from the California Waste Management Board ($20 plus sales tax for California residents) (Curriculum)

Two week self-contained interdisciplinary study for 3rd graders. Designed to teach practical conservation skills for everyday use. Kit includes film strip, cassette tape, picture cards, teacher guide and 36 of each of the following: booklets, pre-test, post-test, badges and home information leaflets.

Available from:
California Department of Education
PO Box 271
Sacramento, CA 95802
(916)445-1261

You Make the Difference: A Health and Safety Education Resource Guide for Teachers of Grades 7-9, published by the Interagency Regulatory Liaison Group (Curriculum)

The goal of the materials is to provide teachers with a tool for helping students to assume responsibility for their own health and safety and for those around them. Each unit begins with information and activities that teachers may adapt to help students recognize risks involved in one general class of substances or products. Next, the unit offers information and activities that can help students identify the specific hazards associated with those substances and products. It then turns to methods of prevention and control of those hazards, both precautions that individuals may take and regulations that the federal government enforces. Teachers may develop the information and suggestions it offers into an eight to sixteen week course on health and safety, or they may integrate material from one or more of its units into various other subject area curricula. Topics covered include: Toxic Substances, Food, Drugs, Cosmetics, Air Pollution, Water Pollution, Noise Pollution, Fire, and Powered Equipment.

Available from:
Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

You may also contact the Consumer Product Safety Commission for information on this publication.

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Sleuth: Educational Activities on the Disposal of Household Hazardous Waste. ($3.60 including postage) (Curriculum)

Excellent guide for use by teachers of junior high and high school classes. Offers creative activities on household hazardous waste disposal. Also adaptable for elementary grades or community education.

Available from:
Toxicant Program/HHWD Project
METRO M/S 81
821 Second Avenue
Seattle, WA 98104
(206)447-4818

Toxic Substances in the Environment. ($6.31 including tax and postage) (Curriculum)

This easy-to-read textbook provides up-to-date and informative reading material on toxic chemicals. Contains a chapter on chemical hazards around the home. The book discusses the benefits of some chemicals, the problems they can cause, and how we can reduce or avoid their harmful effects. Especially appropriate for junior high and high school ages.

Available from:
Kendall/Hunt Publishing Company
2460 Kerper Blvd.
Dubuque, Iowa 52001

Toxicants In Consumer Products. ($4.60 including postage)

Four general classes of household toxics are examined--pesticides, paint products, household cleaners, and automotive products. Each product class is examined as to its health effects and environmental impact. Also reviewed are problems associated with use and disposal of the products. Background information and usage figures are also presented. The reader will find a wealth of information in this manual.

Available from:
METRO
Municipality of Metropolitan Seattle
Exchange Bldg.
821 Second Avenue
Seattle, WA 98104
(206)447-5885

The Trash Monster by SWRL Educational Research and Development under contract from the California Waste Management Board ($23.00 plus sales tax for California residents) (Curriculum)

Two week self-contained interdisciplinary study for 6th graders. Designed to teach practical conservation skills for everyday use. Kit includes film strip, cassette tape, game cards, teacher guide and 36 of each of the following: booklets, pre-test, post-test, badges, and home information leaflets.

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Detroit, MI 48202
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CONSUMER PRODUCT SAFETY COMMISSION

Washington, D.C. 20207

1111 - 18th Street, NW
Washington, DC 20207

5401 Westbard Ave.
Bethesda, MD

The US Consumer Product Safety Commission (CPSC) is an independent regulatory agency charged with reducing unreasonable risks of injury associated with consumer products.

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TOLL-FREE HOTLINE - (800)638-CPSC

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NATIONAL

POISON PREVENTION WEEK

March 18-24, 1984

LIST OF MATERIALS—1984

BROCHURES, FLYERS, AND PAMPHLETS

1. **We Want You to Know About Preventing Childhood Poisonings**
   (Three-fold leaflet, 3½" × 8¼", explaining some of the hazards of accidental poisonings and ways to prevent such accidents. Tells how to get help if a child is poisoned. Available in either English or Spanish.)

   Limited quantities available from U.S. Food and Drug Administration, HFE-88, 5600 Fishers Lane, Rockville, MD 20857.

2. **Tips on Child Safety**
   (Contains facts on proper use and life-saving effectiveness of safety caps, advice on how to instill safety consciousness in preschoolers, and general home safety tips.)

   Produced by Closure Manufacturers Association. Limited quantities free. Send stamped, self-addressed, business-size envelope to Safety Tips, L. Weill, 12th Floor, 110 East 59th St., New York, NY 10022.

3. **Medicines and How to Use Them (OP-063)**
   (Explains function and need of doctor's prescription and gives 10 important tips on the safe way to take medicine. 6 pages, 3¾" × 8½".)

   Up to 99 copies, 30 cents each; 100-499, 20 cents each; 500 or more, 18 cents each. American Medical Association, Order Dept., P.O. Box 821, Monroe, WI 53566. (Payment must accompany all orders.)

4. **Your Child and Household Safety**
   (A monograph by Jay M. Arena, M.D. Discusses continuing need to protect children from potentially harmful substances and circumstances.)

   75 cents each. Special rate is available with name imprinted on orders of 1,000 or more. Published and distributed by Chemical Specialties Manufacturers Association, Inc., Suite 1120, 1001 Connecticut Avenue, N.W., Washington, DC 20036.

5. **Home Safe Home**
   (Tips for parents on how to protect young children in the home environment. Spanish versions available.)

   Up to 100 copies free. Ask for information on larger orders. The Soap and Detergent Association, 475 Park Avenue South at 32nd Street, New York, NY 10016.

6. **The Medicines Your Doctor Prescribes — A Guide for Consumers**
   (Tips on how to insure safe, proper use of prescribed medicines. 10 pages.)

   Up to 50 copies free. Additional supplies, $10 per hundred. Pharmaceutical Manufacturers Association, 1155 Fifteenth Street, N.W., Washington, DC 20005.

7. **Medicine Labels and You**
   (A large-print, two-color brochure explaining the various elements in labels of nonprescription medicines and their importance to safe and effective use of these products.)

   Available free, single or in quantity. The Proprietary Association, Public Affairs, 1700 Pennsylvania Avenue, N.W., Washington, D.C. 20006.

8. **Ten Guides to Proper Medicine Use**
   (A brochure describing steps for consumers to follow when buying and taking prescription and nonprescription medicines.)

   One copy free; larger quantities 50 cents each. Council on Family Health, 420 Lexington Avenue, New York, NY 10017. (Payment must accompany all orders.)

9. **Danger Lurks (OP-304)**
   (Chart for the medicine cabinet. Contains information on what to do in case of accidental poisoning. 8½" × 16".)

   Up to 99 copies, $1.00 each; 100-499, 80 cents each; 500 or more, 60 cents each; 1,000 or more, 50 cents each. American Medical Association, Order Dept., P.O. Box 821, Monroe, WI 53566. (Payment must accompany all orders.)

10. **Poison Perils in the Home (599.75)**
    (A 12-page, 4" × 6" booklet which takes readers from room to room in their homes pointing out everyday household products that might be deadly poisons.)

    50-499, 15 cents each; 500-999, 13 cents each; 1000-4999, 10 cents each. National Safety Council, 444 North Michigan Avenue, Chicago, IL 60611.

11. **Women and Health**
    (10 articles on health concerns of women today, including an article on preventing accidents in the home and a tear-out home Emergency Reference Chart.)

    One copy free; larger quantities 50 cents each. Council on Family Health, 420 Lexington Avenue, New York, NY 10017. (Payment must accompany all orders.)

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12. **The Care and Safety of Young Children — by Dr. Jay M. Arena**
(Discusses the basics of home safety and child care, including tips on poison prevention.)

One copy free; larger quantities 50 cents each. Council on Family Health, Dept. P, 420 Lexington Avenue, New York, NY 10017. (Payment must accompany all orders.)

13. **A General Approach to the Emergency Management of Poisonings**
(A large wall chart displaying poisoning information as it relates to: clinical evaluation; coma; cardiac arrythmia; metabolic acidosis; seizures; gastrointestinal disturbance; elimination of poison from GI tract, skin and eyes; elimination of absorbed substances and supportive therapy; and antidotes. Written for medical, nursing and allied health personnel.)

$5.00 per copy. American College of Emergency Physicians, P.O. Box 61911, Dallas, TX 75261. (Payment must accompany all orders.)

14. **Child's Mind, Child's Body**
(Ten articles dealing with different aspects of childhood development, including one containing information about accidental childhood poisoning.)

One copy free; additional copies 50 cents each. Council on Family Health, 420 Lexington Avenue, New York, NY 10017. (Payment must accompany all orders.)

15. **First Aid for Poisoning**
(A 4" × 9¼" three-fold card on first aid instructions for poisoning emergencies.)

Available through the courtesy of Plough, Inc. Quantities up to 200 free from the Secretary, Poison Prevention Week Council, P.O. Box 1543, Washington, DC 20013. For larger quantities, arrange for local reproduction. Contact Trena Packer, Plough, Inc., P.O. Box 377, Memphis, TN 38151. Telephone (901) 320-2771.

16. **First Aid Skill Book**
(Colorful 31-page booklet. Shows and discusses basic first aid techniques. Aimed at all boys, ages 10-16.)

Catalogue No. 6588, 60¢ ea. Accompanied by a Teacher's Guide, Catalogue No. 18-323, 60¢ ea. Available through Boy Scouts of America, Sales Dept., Supply Division, 1325 Walnut Hill Lane, Irving, TX 75062-1296.

17. **SIOP's Poison First Aid Chart**
(A 9" × 12" two-color chart listing various categories of poisons with general first aid instructions for each.)

1-10 copies, 50 cents each. Ask for information on larger orders. Produced by Human Action for Poison Prevention in Youth, 236 E. Front Street, Bloomington, IL 61701.

18. **First Aid for Poisoning**
(A 16-page booklet primarily for the training of the lay person in emergency care techniques by authorized American Red Cross first aid instructors. ARC Stock No. 320801.)

Available from local Red Cross Chapters at nominal cost.

19. **First Aid for Poisoning**
(An 8½" × 11" two-color Flyer/Poster. ARC Stock No. 320800.)

Limited quantities available through local Red Cross Chapters. Larger quantities available at nominal cost.

20. **First Aid in the Home**
(Wall chart with first aid measures, plus tips for safe storage and use of medicines in the home.)

One copy free; larger quantities 50 cents each. Council on Family Health, 420 Lexington Avenue, New York, NY 10017. (Payment must accompany all orders.)

21. **First Aid Training (ARC 2150)**
(A flyer describing Red Cross First Aid courses of instruction.)

Free at local Red Cross Chapters.

22. **First Aid Guide (OP-015)**
(A guide for first aid in the home. 47 pages, 4" × 7".)

Up to 99 copies, $1.50 each; 100-499, $1.00 each; 500-999 copies, 75 cents each; 1,000 or more, 60 cents each. American Medical Association, Order Dept., P.O. Box 821, Monroe, WI 53566. (Payment must accompany all orders.)

23. **Solid and Liquid Poisons (429.04-21)**
(A 6-page data sheet containing practical information on poisons in and around the home, pointing out special dangers to children.)

10-99, 38 cents each; 100-999, 34 cents each; 1000-4999, 33 cents. National Safety Council, 444 N. Michigan Avenue, Chicago, IL 60611.

24. **Tips Against Tampering**
(Suggestions to consumers about how to help protect themselves against criminal tampering with OTC medicines.)

Available free, single or in quantity. The Proprietary Association, Public Affairs, 1700 Pennsylvania Avenue, N.W., Washington, DC 20006.

25. **The Poison Safety Game**
(A game for older elementary school children to help them protect their younger siblings from poisonings.)

Available free in single copies or bulk quantities up to 200 copies. Food and Drug Administration, HFE-88, 5600 Fishers Lane, Rockville, MD 20857.

26. **Who, Why, When and Where of Food Poisons**
(Chart identifying some of the more common sources of food poisoning and methods of preventing food contamination.)

Available free in single copies or bulk quantities up to 200 copies. Food and Drug Administration, HFE-88, 5600 Fishers Lane, Rockville, MD 20857.

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27. **"Dear Mom and Dad"—Lead Paint Poisoning Prevention**
(Pamphlet for distribution to residents of areas with old lead paint poisoning hazards. Spanish edition also available.)

Quantity prices: 1-99 copies at 12¢ each; 100-999 at 10¢ each. National Paint and Coatings Association, 1500 Rhode Island Avenue, N.W., Washington, DC 20005.

28. **Common Poisonous and Injurious Plants**
(Information on what to do when a child has ingested parts of a plant.)

Copies available from Superintendent of Documents, Government Printing Office, Washington, DC 20402. $3.25 charge per copy. Stock No. 017-012-00196-0.

29. **Plants that Poison**
(An illustrated chart of common poisonous plants indicating size, toxic parts and symptoms of poisoning. Contains infosmation on preventing plant poisoning and emergency measures.)

Single copy and quantity price list free. Send self-addressed, stamped business envelope to: The Kalamazoo Poison Prevention Council, P.O. Box 2261, Kalamazoo, MI 49003.

30. **Safe Use of Aerosols Around the House**
(Instructs the reader on proper use and storage of these products. Shows how an aerosol product works and helps families understand directions and cautions on the label.)

Single copies up to 10 free, 10 cents each additional copy; minimum order: $2.00. Chemical Specialties Manufacturers Association, Suite 1120, 1001 Connecticut Avenue, N.W., Washington, DC 20036.

31. **Dennis the Menace Takes a Poke at Poison (Spanish only)**
(A comic book instructing children to "ask first.")

Limited copies available free. For Spanish order no. FDA 81 70 05 S. English version is not available. Food and Drug Administration, HFE 88, 5600 Fishers Lane, Rockville, Maryland 20857.

32. **Perils of Pip — Preventing Poisoning**
(Colorfully illustrated comic book about an elephant who teaches poison prevention.)

Stock No. 052-011-00176-7, $2.75 for single copies; $11 for 10 copies. Specify stock number to Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

33. **Legend of Happy the Poison Prevention Dog**
(A brochure used to introduce the SIOP Poison Prevention Program to children.)

1-10 copies, 50 cents each. Ask for more information on larger orders. Produced by Human Action for Poison Prevention in Youth, 236 E. Front Street, Bloomington, IL 61701.

34. **Happy's Poison Prevention Activity Book**
(A forty-four page children's activity book that is used by the parents or teachers to teach the children to avoid those items that have a SIOP sticker on them.)

1-10 copies, one dollar each. Ask for information on larger orders. Produced by Human Action for Poison Prevention in Youth, 236 E. Front Street, Bloomington, IL 61701.

35. **Emergency Action for Poisoning**
(3½" × 8½" card outlining the first aid steps to take in the event of a poisoning. Produced in conjunction with the American College of Emergency Physicians.)

Up to 5 copies available free. Reproduction proof for local printing available for $5.00. American Association of Poison Control Centers, c/o Dr. A. Manoguerra, University of California Medical Center, Regional Poison Center, 225 Dickinson St., San Diego, CA 92103. Regional and local poison centers have other informational material available on request.

36. **There Are Good Reasons For Buying Certified Products**
(An 8½" × 11", 3-fold, flyer-poster relating to the use of children's art materials.)

Single copies free; quantities upon request. Art and Craft Materials Institute, 715 Boylston Street, Boston, Massachusetts 02116.

37. **Injury Prevention Program Safety Slips**
(There are 4 age-related sheets per set, with safety information on poisons, burns, falls, and other hazards.)

$8 for 100 sets. American Academy of Pediatrics, Publication Department, PO Box 1034, Evanston, IL 60204.

38. **Injury Prevention Program Safety Surveys**
(There are 3 questionnaires per set, in checklist format concerning poisons, burns, falls, and other hazards.)

$6 for 100 sets. American Academy of Pediatrics, Publication Department, PO Box 1034, Evanston, IL 60204.

39. **First Aid for Poisoning Chart**
(An 11" × 17" chart with first aid instructions for poisoning and for several other types of injury.)

Single copies free. $40 for 100 copies. American Academy of Pediatrics, Publication Department, PO Box 1034, Evanston, IL 60204.

POSTERS

40. **National Poison Prevention Week—1984**
(An 11" × 17" poster for windows, bulletin boards, etc. Perforated section allows for year round use.)

Quantities can be purchased from Poison Prevention Week Council, P.O. Box 1543, Washington, D.C. 20013. 25 copies $9.00; 50 copies $16.00; 100 copies $28.00. Post Paid. (Payment must accompany orders.)

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41. **Your Baby Is An Explorer**
(8½" × 11½" illustrated, two-color poster calling mother's attention to the necessity of keeping dangerous items out of children's reach.)

Minimum orders of 10. Under 500, 25 cents each; 501-999, 20 cents each; over 1000, prices on request. Postage prepaid. The Soap and Detergent Association, 475 Park Avenue South at 32nd Street, New York, NY 10016.

42. **Store Safely Out of Reach (4723-A)**
(8½" × 11" color poster showing child unsuccessfully reaching for properly stored household poisons.

1-9, 59 cents each; 10-99, 45 cents each; 100-999, 27 cents each. National Safety Council, 444 N. Michigan Avenue, Chicago, IL 60611.

43. **Keep Safety . . . Away from Children (4069-A)**
(8½" × 11" color poster emphasizing the importance of keeping children away from medicines and cleaning products.)

1-9, 59 cents each; 10-99, 45 cents each; 100-999, 27 cents each. National Safety Council, 444 N. Michigan Avenue, Chicago, IL 60611.

FILMS, SLIDES, TALKS, AND MEDIA AIDS

44. **The Role of Medicines in Preventive Health Care**
(71 slides, 35mm, color; with script plus recorded cassette with both audible and inaudible tones. Provides adult audiences with information on how to insure safe, proper use of prescribed medicines, questions to ask physicians and pharmacists.)

Purchase price: $15.00. Pharmaceutical Manufacturers Association, 1155 Fifteenth St., N.W., Washington, DC 20005.

45. **Child Safety Is No Accident**
(13-minute, 16mm, color, sound film. Thousands of accidents occur to children each year. How can these accidents be prevented, and what should be done if they do occur? The film features: burn hazards, poison prevention, animal safety, auto safety and first aid.)

Available on free loan. Produced by the Prudential Insurance Company. Available from Modern Talking Picture Service, 5000 Park Street North, St. Petersburg, FL 33709. Telephone 813-541-7571.

46. **Poison Prevention in the Home**
(This 16mm color film is a Public Service Announcement. It dramatically conveys the importance of parental care in safeguarding children from household poisons. "You wouldn't poison your child on purpose, don't do it through carelessness.")

Produced in cooperation with the American College of Emergency Physicians. Copies are $5.00 each and can be ordered from Valerie Itkin, Burson-Marsteller, 866 Third Avenue, New York, NY 10022. (Payment must accompany all orders.)

47. **Poison Prevention (slide series) (576.08)**
(Thirty 2" × 2" full color cardboard slides, sturdy shipping-storage container, and 20-page script book including hints for conducting an interesting slide presentation, and questions to stimulate discussion following the presentation. Slides deal with poison prevention and control in the home.)

Purchase price: 1 slide set, $65.00; 2-9 sets, $60.00. National Safety Council, 444 N. Michigan Avenue, Chicago, IL 60611.

48. **250,000 Ways to Destroy a Child's Life Without Leaving Home**
(15-minute color, sound film. Relates poisoning hazards in average home to stages of a child's development and gives needed prevention measures. Also shows steps to follow when precautions fail. Informative for those responsible for child-care as well as medical and paramedical personnel. Includes a new film guide to accompany film and a work sheet for teachers.)

Available as a 16mm film color sound film or video cassette $255. Contact Mar/Chuck Film Industries, P.O. Box 61, Mt. Prospect, IL 60056.

49. **Look and Do First Aid Visual Aid**
(145-frame slide set of filmstrip, with script. Designed to show how to recognize and treat first aid emergencies including a full section on poison prevention and first aid. Aimed at boys, 10–16.)

Slides (AV-636), $19.00; filmstrip (AV-598), $11.00. Audiovisual Service, Boy Scouts of America, 1325 Walnut Hill Lane, Irving, TX 75062-1296.

50. **The Travels of Timothy Trent**
(10-minute, 16mm, color, sound film. Tells parents and others responsible for the care of young children how safety packaging protects from accidental poisoning. Free discussion materials also available with this film.)

Produced by U.S. Consumer Product Safety Commission. Purchase price $100. (Order No. 007913/RM), from National Audio-Visual Center, Order Dept., Washington, DC 20409.

51. **Lead Poisoning Could Strike Your Child**
(A 23-minute, 16mm, sound color film on old lead paint poisoning causes and prevention and childhood lead poisoning symptoms and treatment.)

Produced in cooperation with National Paint and Coatings Association. Available from Mar/Chuck Film Industries, P.O. Box 61, Mt. Prospect, IL 60056. $325 per print.

52. **Always Be Careful**
(A 10 minute, 16 mm, sound, color film on instruction in safety education.) Includes emphasis on safety practices at school, at home, and in the community. This film focuses on the ABC's of Safety in the Home and suggests five important safety rules pertaining to home appliances, stoves, bathtubs, and sinks, electric and household cleansers.

Produced by Lockwood Films, Inc. Available from Mar/Chuck Film Industries, P.O. Box 61, Mt. Prospect, IL 60056. $210 per print.

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MISCELLANEOUS

53. National Poison Prevention Week Packet

(Folder containing list of available materials, fact sheet, state and local officials' suggested proclamations, and other promotional materials for the Poison Prevention Week Observance.)

Order from Secretary, Poison Prevention Week Council, P.O. Box 1543, Washington, DC 20013.

54. Annual Report for NPPW—1983

Single free copies available from the Secretary, Poison Prevention Week Council, P.O. Box 1543, Washington, DC 20013.

55. NPPW List of Materials—1984

A limited number of additional copies of this publication you are now reading is available, free, from the Secretary, Poison Prevention Week Council, P.O. Box 1543, Washington, DC 20013.

56. Presidential Proclamation

Single copies of the President's proclamation will be available after date of issue, Secretary, Poison Prevention Week Council, P.O. Box 1543, Washington, DC 20013.

57. SIOP Stickers

(An 8" x 9" sheet with ten SIOP Stickers and an explanation of the SIOP Poison Prevention Program.)

1–10 copies, 75 cents each. Ask for information on larger orders. Produced by Human Action for Poison Prevention in Youth, 236 E. Front Street, Bloomington, IL 61701.

58. Parent and Teacher Introduction to the SIOP Poison Prevention Program

(A brochure used to acquaint people with the SIOP Poison Prevention Program.)

1–10 copies, 50 cents each. Ask for more information on larger orders. Produced by Human Action for Poison Prevention in Youth, 236 E. Front Street, Bloomington, Illinois 61701.

59. A Guide to Teaching Poison Prevention in Kindergarten and Primary Grades

(A 68-page manual published by the Consumer Product Safety Commission; contains games, pictures, work sheets, designed to assist in teaching poison prevention to children. Stock No. 052-003-00257-4.)

Single copies: $4.75. Specify above stock number to Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

60. Poison Awareness: A Resource Book for Teachers, Grades 7-9

(Activities and guidelines for teaching seventh through ninth-grade students about poison prevention, particularly the use, storage and disposal of four types of potential poisons. The book is geared toward helping teachers to help their students make their homes safer for younger siblings, as well as increasing parental awareness about poison-proofing their homes.)

Stock No. 052-011-00201-1, single copy: $5.00. Specify stock number to Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

61. Emergency Action for Poisoning

(A 5¼" x 11" printing master in either English or Spanish. This high-quality master copy is intended to be reproduced, with space provided for the local poison center and ambulance number to be inserted, along with the name of the hospital or organization sponsoring the printing. Contains first-aid information for the general public, approved jointly by the American College of Emergency Physicians and the American Association of Poison Control Centers.)

$5.00 per copy. Order from ACEP Distribution Center, P.O. Box 61911, Dallas, Texas 75261. (Payment must accompany all orders.)

62. Poison Prevention Program Kit (599.73)

(Basic materials for a complete community-wide poison prevention program. Includes publicity materials, group project ideas, data sheets, reprints, posters, leaflets.)

$4.00 plus shipping. National Safety Council, 444 N. Michigan Avenue, Chicago, IL 60611.

63. Poison Prevention Information

(Selection of publications varies from state to state.)

Cooperative Extension Service educational resources are available from the Cooperative Extension Service in every county. Information in the form of publications, slides, meeting ideas, visuals and volunteer speakers are usually available. The county Cooperative Extension Service is usually listed under county government in the telephone directory. State headquarters at the land-grant universities are another source.

64. SIOP's Poison Prevention Packet

(Folder containing eleven various pieces of SIOP's educational materials, including first aid chart, introductory brochures, stickers, safety check-list, activity book, poisonous plant guide, and babysitters' guide.)

1–10 copies, $4.50 each. Ask for information on larger orders. Produced by Human Action for Poison Prevention in Youth, 236 E. Front Street, Bloomington, IL 61701.

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55. **Handbook of Common Poisonings in Children**
(Thorough discussion of most frequent causes of poisoning and measures for poison prevention.)

$15 per copy. American Academy of Pediatrics, Publication Department, PO Box 1034, Evanston, IL 60204.

Note: All prices in this list are subject to change after this document is printed.

Poison Prevention Week Council

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P.O. Box 1543
Washington, D.C. 20013
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Center for Occupational Hazards

5 Beekman Street, New York, New York 10038 Area 212/227-6220

What is COH?

The Center for Occupational Hazards (COH) is a national clearing-house for research and information on health hazards in the arts.

COH was incorporated as a not-for-profit, tax-exempt organization in 1977. Originally COH concentrated on hazards in the visual arts, but quickly expanded its activities to include performing arts and museum conservation as a result of a demand for information in these areas.

COH receives public assistance from the National Endowment for the Arts (Visual Arts Program, Inter-Arts Program, Design Arts Program) and the New York State Council on the Arts (Visual Arts Services Program, Museum Aid Program, Theater Program and Arts Service Organizations Program). COH has also received support from the Monsanto Fund, the Buckeye Trust and from many individual contributors.

How Can COH Help You?

COH has a variety of services aimed at helping to eliminate hazards in the arts. These are:

1. *Art Hazards Information Center.* The Information Center, directed by Monona Rossol, answers about 50 written and telephone inquiries daily on art hazards. These include questions on hazards of specific materials, ventilation, respirators and other precautions, referrals to physicians trained in occupational health, etc. COH distributes over 50 books, pamphlets, articles and data sheets to disseminate information on art hazards. (Send a self-addressed stamped envelope for our publications list).
2. *Art Hazards Newsletter.* COH publishes a 4-page newsletter which appears 10 times per year. It covers many topics including new hazards, precautions, government legislation and regulations, lawsuits, and calendar of events. Presently 3500 copies of each issue are printed. Of these, about 1500 free copies are sent to arts councils, arts publications, artists organizations, non-profit theaters and press; about 700 are sent to subscribers. The remainder are distributed at lectures, workshops and conferences, and through the Art Hazards Information Center. Reprinting of articles from the newsletter is encouraged, and many arts publications do so on a regular basis.
3. *Lecture Program.* COH provides speakers for lectures, workshops and conferences. In 1981 COH gave over 50 such lectures.
4. *Art Hazards Course.* COH offers a 5-day 25-hour course twice a year. This course is intended to give an extensive knowledge of art hazards to teachers, school administrators, health and safety personnel, physicians and others interested in art hazards. In 1983 courses will be given on Jan. 10-16 and June 6-10.
5. *Consultation Program.* Dr. Michael McCann, a certified industrial hygienist, will conduct a walk-through survey of art schools, art centers, conservation studios, etc. A written report will include recommendations for correction of observed hazards and for a health and safety program. In the past, over 20 such consultations have been done.

For further information on these programs and their costs, contact the Center for Occupational Hazards, 5 Beekman Street, New York, NY 10038. Telephone 212/227-6220.

Publications List

Checks or money orders should be made payable to the Center for Occupational Hazards in U.S. funds.

Artists organizations, art schools or artists' publications wishing to reprint articles or data sheets should address such requests to: Monona Rossol, Director, Art Hazards Information Center, 5 Beekman Street, New York NY 10038. ■

Books and Pamphlets

Artist Beware: The Hazards and Precautions in Working with Art and Craft Materials, by Michael McCann, Ph.D. 396 pp. Watson-Guptill, New York (1979) $17.95 ~~$16.95~~...

Cadmium Inhalation Poisoning with Special Reference to Welding and Silver Brazing. Technical bulletin for physicians and industrial hygienists. 2nd ed. California Department of Public Health, 1971. 39 pages $5.00

Ceramics Health Hazards: Occupational Safety and Health for Artists and Craftspeople, by Gail Conngsby Barazani, 1979. 16 pp. $3.40

Handbook of Organic Industrial Solvents, 5th Ed., Alliance of American Insurers, Chicago (1980). 124 pp. $4.50..

Health Hazards in the Arts and Crafts: Proceeding of the SOEH Conference on Health Hazards in The Arts and Crafts. Eds: Michael McCann and Gail Barazani, Society for Occupation and Environmental Health, Washington, D.C. (1980) 255 pp $16.00..

Health Hazards Manual for Artists, by Michael McCann, Ph.D., revised edition, 1979, Foundation for the Community of Artists, New York, 48pp. $3.50 .

Health and Safety in Printmaking: a manual for printmakers, by Cherie Moses, James Purdham, Dwight Bowhay, and Roland Hosein, Alberta Labor Occupational Hygiene, 1978, Edmonton (Canada) $2.50..

Health Hazards in the Arts: Proceedings of the 1977 Vermont Workshops. Edited by Julian Waller, M.D. and Lawrence Whitehead, Ph.D., University of Vermont Department of Epidemiology and Environmental Health, 1977 $3.00

Industrial Ventilation: A Manual of Recommended Practice, by the Committee on Industrial Ventilation, ACGIH, 17th Edition (1982). $15.00..

Pest Control in Museums: A Status Report (1980). Edited by Stephen R. Edwards, Bruce M. Bell and Mary Elizabeth King. Association of Systematics Collections (1981). A reference book on pest control in museum collections and libraries. Available from COH. $15.00**

What you should Know About Health and Safety In The Jewelry Industry. Jewelry Workers Health and Safety Research Group, Providence, R.I., 1980. 35 pp. $4.50

* Add 1.00 ** Add 1.50

*** U.S., add $2.00; Canada add $3.50.

(Cont.)

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Articles

Electric Kiln Emissions and Ventilation, 4 page data sheet by Monona Rossol, M.S., M.F.A. $0.75

Health Hazards in the Arts, by Bertram Carnow, M.D., *American Lung Association Bulletin*, (Jan/Feb 1976). $.50

Health Hazards in Woodworking, by Stan Wellborne, *Fine Woodworking*, (Winter 1977). $1.00

"Health and Safety in Schools," compilation of 6 articles from the *Art Hazards News* by G. Barazani, M. McCann, M. Rossol, and L. Smith. $1.00

Impact of Hazards in Art on Female Workers, by Michael McCann, Ph.D., *Preventive Medicine 7*, 338 (1978). $1.50

"Teaching Art to High Risk Groups," compilation of 4 columns in *Art Hazards News* by Monona Rossol, M.S., M.F.A. $1.00

Texile Dyes Are Potential Hazards, by Catherine Jenkins, Ph.D., *Journal of Environmental Health* **40**, 256 (1978). $1.50

The Safety of Lead Frits, by Monona Rossol, M.S., M.F.A., presented at SOEH Conference on Health Hazards in the Arts and Crafts, Washington, D.C. (1978). $ .75

"Working Safely With Fumigants in Paper Conservation," 4-page data sheet by Deborah Nagin, M.P.H. $0.75

Data Sheets

The following data sheets are 1-3 pages and discuss a specific craft or subject. All data sheets are 50¢ each.

Are Public School Art Materials Safe?**
Art Painting
Asbestos Substitutes**
Ceramics
Children and Art Materials*
Commercial Art Hazards*
Common Solvents and Their Hazards
Craft Dyeing
Face and Eye Protection
Flammable and Combustible Liquids
Gloves
Labeling Problems of Arts and Crafts Materials
Lead and Lead compounds**
Lead Glazes and Food**
Material Safety Data Sheet **
Medical Surveillance Program for Art Schools**
Organic Pigments
Paint Removers **
Photography*
Plastics*
Respirators
Reproductive Hazards*
Safety Rules for Power Tool Operation
Silk Screen Printing Hazards**
Silver Soldering
Stained Glass*
Ten Safety Rules for Artists and Craftspeople
Traditional Sculpture and Casting*
Welding, Soldering and Brazing*
Workers' Compensation for Artists**

* excerpted from the Health Hazards Manual for Artists
**excerpted from the Art Hazards News

Theater Hazards Data Sheets

Introduction to Theater Hazards	$ .75
Theatrical Make-up and Cosmetic Aerosol Sprays	$ .75
Paints Used in Theater Crafts	$ .75
Plastics Used in Theater Crafts	$ .75
Solvents Used in Theater Crafts	$ .75

Ventilation for Theater Crafts, 5 page data sheet by Nancy Clark, M.A. and Monona Rossol, M.S., M.F.A. $0.75

Air-Purifying Respirators for Theater Crafts, 4 page data sheet by Monona Rossol, M.S., M.F.A. $0.75

NB The above data sheets are also useful for visual arts, crafts and museum conservation.

Miscellaneous

Health Hazards in the Arts and Crafts. A 16½ × 20" multicolored wall chart, with hazards and precautions. $2.75

Bibliography: books, articles, publications about art hazards and related subjects. $1.00

Consumer's Guide to Cosmetics, by T. Conry, D. Fry, N. Fry, A. Okagaki. 376 pp. Anchor Press/Doubleday, New York, (1980) $4.50

Complete Syllabus for Health Hazards in the Arts Course (10 pages plus bibliography and publications list) $2.00.

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LOS ANGELES	Los Angeles County Medical Association Regional Poison Information Center 1925 Wilshire Blvd. Los Angeles, CA 90057 (213) 484-5151
OAKLAND	Children's Hospital Medical Center of Northern California 51st and Grove Streets Oakland, CA 94609 (415) 428-3248
ORANGE	University of California, Irvine Medical Center 101 City Drive, Route 32 Orange, CA 92668 (714) 634-5988
SACRAMENTO	Regional Poison Control Center Univ. of Califoria, Davis, Medical Center 2315 Stockton Blvd. Sacramento, CA 95817 (916) 453-3692, (800) 852-7221 (N. CA)
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SAN JOSE	Central-Coast Counties Regional Poison Control Center Santa Clara Valley Medical Center 751 S. Bascom Ave. San Jose, CA 95128 (408) 279-5112, (800) 662-9886 (Statewide)

*A complete list of Poison Control Centers found nation-wide is available from the U.S. Department of Health and Human Services, Food and Drug Administration, Office of Drugs, Poisoning Surveillance and Epidemiology Branch, 5600 Fishers Ln., Rockville, MD 20857. Telephone: (301)443-6260.

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Source: Guide to the Role of Local Health Officials in the Local Management Of Hazardous Waste,* prepared by Larry J. Gordon, M.S., M.P.H. 1982. Published by the American Public Health Association. Funded by Grant No. T9011397-01, U.S.E.P.A.

*NOTE: The information listed is from 1982 data. Personnel changes may

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HOUSEHOLD TOXICANTS: EVERYBODY'S PROBLEM

It has been said that the average home today contains more chemicals than the average chemical lab of 100 years ago. In a society embarrassed by "ring around the collar", water spots on glasses, and a wash not as "white" as their neighbors, the demand for new and improved formulas gives rise to some new and potentially hazardous product ingredients--chemicals which the average consumer knows little about.

Used industrially, these chemicals are subject to various health and safety standards; yet, these same substances are used freely and often carelessly in homes across the nation. As a result, injuries and illnesses occur that may have been prevented if consumers knew more about the products they buy, why the products should be used as directed, and how the products should be disposed safely.

The problems with household toxicants can be divided into two issue areas: 1) safe use; and 2) safe disposal.

SAFE USE

Although many illnesses or adverse health effects associated with chemicals found in household products are relatively benign--headaches, dizziness, nausea, shortness of breath, eye and throat irritations, etc.--some chemicals are associated with more serious conditons such as respiratory infections, skin rashes, burns, and cardiac problems. Reproductive health hazards and cancer, with a latency period of up to 50 years, have also been associated with some chemicals found in common home and garden products. In addition, consumers should be aware that some chemicals produce other delayed reactions. They may not realize that the headache they are experiencing is the result of a household cleaner they used an hour or so earlier. Also, they may not realize the "flu symptoms" they are having are really signs of pesticide poisoning.

If consumers are to play a responsible role in safeguarding their health and environment, they must be educated to the potential dangers surrounding the chemical products they use. Some consumers rely on product labels that simply do not always provide them with complete and accurate information needed to balance the potential risks against the benefits when selecting a product for home use. Consumers can assume a product may contain a potentially hazardous ingredient if the label bears such words as "danger", "poison", "flammable", "caution", "warning", "acid", or "pesticide".

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Two laws that relate to consumer products are the Hazardous Substances Act (HSA) and the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). They are discussed below.

HAZARDOUS SUBSTANCES ACT

There is no federal law that requires manufactuers to test their products for safety before being placed in the marketplace. The hazards of some consumer products are revealed after complaints are received by the Consumer Product Safety Commission, the organization responsible for enforcing the Hazardous Substances Act (HSA). It could take years before enough injuries occur and complaints are received before government or the manufacturer remove the product from the market. Even when a product is removed from the market, injuries still occur because of the public's failure to follow re-call instructions or because some people never realized a re-call existed. If you suspect a product is hazardous or would like to see it sold in safer containers, write to the government (Consumer Product Safety Commission, Washington, DC 20207 or call their toll free number (800)638-CPSC). Faulty products can only be corrected if someone is made aware of the problem. By law, manufacturers are required to keep records of all adverse health effects caused by a hazardous chemical they sell. Your letter to the manufacturer can help to build a case against the product.

The Hazardous Substances Act is the federal law that establishes labeling requirements for consumer products containing hazardous ingredients (except pesticides). The law, enforced by the Consumer Product Safety Commission, also grants the Commission the power to ban substances posing such an extreme hazard that adequate labeling cannot be written. Carbon tetrachloride for instance, was banned in 1970 for use as a household chemical (such as a dry cleaning agent, solvent, or glue) when it was found to cause liver and other body damage. Not many substances have been banned. Usually, the label or package is required to be changed to reflect the hazards. For example, the product may need to be packaged in child resistant containers.

If a chemical is considered a hazardous substance, by definition of the law, the product is subject to labeling requirements.

By definition, a hazardous substance is any substance or mixture of substances which is toxic, corrosive, an irritant, flammable or combustible, a strong sensitizer, generates pressure, is radioactive, or can cause substantial personal injury or illness.

It is important to note that the Hazardous Substances Act is concerned only with acute or immediate effects and does not take into consideration the long term (chronic) effects of a product. For products demonstrating an acute effect due to the result of a hazardous ingredient, the following labeling requirements exist:

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- Signal words must be used such as "danger", "warning" or "caution" depending on the level of danger. (Must appear on front label.)

- Description of the hazard must appear, such as "vapor harmful", "flammable", etc. (Must appear on front label.)

- A statement warning users how to avoid the hazard must appear. Example: "Use in well ventilated room".

- A common or chemical name for the hazardous substance must appear.

- If necessary, instructions for safe use and handling must be given.

- First aid instructions must be given.

- Name and location of manufacturer, distributor or repacker must appear on the label.

- Statement, "Keep Out of Reach of Children", or its equivalent, must be used.

Some products are not required to list product ingredients. This does not mean that potentially toxic ingredients are absent from the product. Rather, it simply implies that substances in the product are not considered to cause an immediate (acute) adverse reaction. For example, methyl alcohol used in quantitites of less than 4% does not require labeling. Used in quantities of 4% and above, labeling is required. Methyl alcohol can cause blindness if ingested.

FEDERAL INSECTICIDE, FUNGICIDE AND RODENTICIDE ACT

Pesticides are chemicals designed to kill insects, rodents, weeds and fungus. Disinfectants are considered pesticides because they are intended to "kill" germs. Pesticides are regulated under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). Under this law, chemicals are supposed to be tested for their health effects, however, many pesticides in use today have not been tested for their long term effects on human health. Authorities believe that between 79% and 84% of all pesticides have not been adequately examined for their ability to cause cancer. In addition, 90-93% are inadequately tested for their ability to cause genetic mutations, and 60-75% are inadequate in terms of testing for birth defects. Information on the long term health effects of pesticides that have been tested is currently kept secret from the public. Even when toxicological data exists, the data may not be adequate.

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Testifying under oath in April 1976 at a Senate hearing, twelve Environmental Protection Agency scientists challenged the reliability of animal tests for safety done by pesticide manufacturers and by contract laboratories. More recently, three high-level executives from a contract laboratory (Industrial Bio-Test of Northbrook, Ill.) were convicted for providing fraudulent or fabricated pesticide health and safety test data to the Environmental Protection Agency (EPA). A recent EPA study determined that at least 140 different pesticides were registered with more than 800 studies supplied by that same laboratory. Only 25 of the studies are known to be valid and sufficient to support the registration of the pesticide by the EPA.

Farmers are required by law to have a license to spray pesticides, and therefore are given special information on use and disposal. Consumers have to rely upon the label to tell them about special use methods. Some chemicals are restricted in terms of how they must be used. For example, some insecticides must not be sprayed directly upon fruit that will be harvested, while others are so corrosive that you must protect equipment from exposure to them to protect the paint on the equipment. Some pesticides used in agriculture are so long-lived that no one can enter the field for weeks after they have been applied.

Care in using pesticides is important, as the chemicals used in gardens often kill insects which are not harmful to the garden. For example farmers often avoid spraying chemicals onto blooming trees in order to avoid killing the honey bees which are gathering pollen there. Powdering rose bushes for aphids, for example, will often also kill lady bugs or honey bees. Insects such as lady bugs are known as "beneficial insects", because they can actually help control other pests in the garden. Lady bugs eat aphids, which are a major pest in many backyard gardens. When you kill the beneficial insects, you must inherit their work.

While farmers are required to get a permit before using certain pesticides, consumers are able to buy that same pesticide right off the shelf. Most homeowners are unaware of the conditions attached to commercial application of some pesticides. Consumers will often think that doubling the amount suggested for use on the label will double the effectiveness of the product. Some products, in addition to causing a health problem, can create other kinds of damage when used improperly. For example, applying too much herbicide to your garden can damage the soil, and make it impossible to grow anything. Manufacturers, however, have established the legal right to say that any problems caused by use of their products that is not used according to the label is not their responsibility.

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Ingredients on pesticide products must be listed as "active" or "inert". The terms "active" applies to the ingredients that actually do what the product is intended to do. For example, in a pesticide, the active ingredient is the chemical that acutally kills the pests. The active ingredients may be only a small percent of the total contents.

The term "inert" refers to any other substances in the products. These usually form a "vehicle" to make the active ingredients easy to apply. The term "inert" does not mean that the substances are harmless. The inert ingredient can be as dangerous as the active ingredient. Inert ingredients are not tested for their acute or chronic health effects. Also, testing is not conducted for adverse health effects resulting from the use of chemicals in combination with each other. (Example: effects resulting from using two different products.) One chemical used alone may produce a greater hazard when used with another chemical.

When using any product containing potentially harmful chemicals, there are a few precautions you can take to reduce exposure:

- Keep Products in their Original Containers - Over the years, some manufacturers have significantly altered the ingredients of a particular product. In the event of a poisoning, the product label can give a clue to the product's age and ingredients. In addition, accidents have occurred because toxicants were placed in containers associated with food and drink (e.g., ceral boxes, coffee cans, cider jugs, milk cartons). Kerosene and other petroleum products stored in soda bottles and tin cans have resulted in many accidential poisonings.

- Don't Overuse a Product - "More" is not always better. In fact, it can create more harm than good. For instance, using "more" of a laundry cleaner simply places an additional strain on the sewage treatment plant (remember, sewers generally empty into a treatment plant or directly into the river). It does not produce cleaner clothes! Excess use of pesticides may not only kill the insects, but can also damage the soil and make it useless for planting a garden.

- Don't Leave Containers Unopened - Many products contain extremely volatile chemicals, meaning they evaporate quickly (example: solvents). Airborne fumes, from the evaporation process, can be harmful to your health. Avoid wearing soft contact lenses when working around solvents. They can absorb the chemicals and keep the chemical near the eyes causing damage or irritation.

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- "Clean Up" After Using Toxics - Carefully seal products. Open products can evaporate quickly, thus polluting the air. Rags containing flammables (e.g., furniture stripper, paint remover, etc.) are fire hazards. Dispose of them in a covered metal container. this permits oxygen from getting to the rags and igniting.

- Use Products in Well-Ventilated Areas to Avoid Breathing Fumes - One open window is not considered adequate ventilation. Take "fresh air" breaks. Work outdoors whenever possible. Use an exhaust fan. Make sure the air is escaping to the outdoors and is not being recirculated indoors.

- Don't Mix Chemicals - Household products should be used one at a time. Never mix products unless specifically instructed on the product label. Mixing products can produce explosive reactions or toxic fumes. One very common example is the use of chlorine bleach and ammonia, which produces toxic chloramine fumes. Exposure to some household toxicants and toxic fumes can aggravate or magnify pre-existing medical conditions in addition to contributing to new reactions. Never mix different brands of the same product. Each brand may contain different ingredients.

- Beware of Antidotes - Antidotes listed on product labels are often not the best first aid remedy. In a random survey of 1,019 household product labels conducted by the New York Poison Control Center, 85% of the labels had inadequate or erroneous first-aid information, while 6% of the labels were wrong, giving first-aid advice that was potentially dangerous to the victim. Although product manufacturers are updating the first-aid information provided on labels, a number of consumers are using older products. When a poisoning occurs, always call a medical professional or a Poison Control Center for firstaid advice.

- Wear Protective Clothing - When a product calls for the use of protective clothing, heed the warning. The use of gloves, for instance, is not intended to avoid staining your hands; rather, it offers protection against having the chemical enter the bloodstream through skin absorption. People often associate poisonings with ingestion, but fail to make a similar connection with skin absorption and inhalation.

- Keep Products Out of Reach of Children and Pets - Most poisonings occur when a product is left unattended. Keep all potentially toxic products on high shelves or in locked cabinets. Keep away from food items to avoid any confusion or accidental contamination.

- Buy Only What You Need - Some products require using only small amounts to obtain effectiveness. Buying the "economy size" may leave you with unwanted portions and a disposal problem.

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- Avoid Use of Aerosols if Possible - Unfortunately, aerosol spray products dispurse their contents beyond the target area or object, often making the air unfit to breathe. The small size of aerosolized particles makes it possible for the chemicals to be inhaled deeply into the lungs and quickly absorbed into the bloodstream. A major concern with aerosol cans is their explosive quality. When heated or left lying in a warm room, they have the potential to become powerful bombs.

- Be Sensitive to Reactions - Some people may become ill after cleaning house, having new carpet installed*, having their home fumigated**, working on a hobby, etc. These individuals may be having a reaction to a chemical exposure. Others take more time to develop a reaction or show no reaction at all. Some people are extremely sensitive to their environment and react negatively even to the slightest toxic exposure. Some authorities believe that extremely sensitive individuals should be considered early warning systems--much like the canaries who reacted to methane gas in the mines. The bodies of these sensitive individuals may be detecting something that will eventually cause an effect in others, after repeated exposures.

- If Pregnant, Avoid Toxic Chemical Exposure As Much As Possible -Many chemicals in household products have not been tested for their effect on unborn children.

- Always Call Your Local/Regional Poison Control Center (or Medical Professional) in the Event of a Poisoning - The Poison Control Center will explain what to do for a particular poisoning incident. They can also tell you the acute health effects associated with a given chemical. Keep a bottle of ipecac (induces vomiting) in the home. Use it only on the advice of a medical practitioner. Vomiting is DISCOURAGED in some poison situations.

SAFE DISPOSAL

If society is prepared to accept the presence of some hazardous chemicals because of their redeeming benefits, they must also accept the responsibility and cost involved in containing these chemicals, thus, preventing adverse health and environmental effects resulting from unsafe disposal practices. Reliance on traditionally used methods can injure refuse collectors, burden

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* Some rugs are treated with insect toxins as part of the manufacturing process.

**Some insecticides can never be totally removed, once applied.

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sewer systems and harm the environment and living things. Such methods include throwing household toxicants on the land or in the trash, pouring them down a drain or sewer, and storing them in the home or garage indefinitely. Each option is associated with some potentially severe consequences including the following:

- Refuse collectors have been injured while unknowingly collecting household trash containing toxic chemicals. In 1981, 42 collectors in Los Angeles suffered injuries requiring hospital treatment due to chemical exposure from acids and toxic fumes. Injuries to these public service employees are generally caused by plastic bags or bottles breaking when the trash is emptied into the trucks and compacted. Public officials attribute such incidents to a lack of consumer awareness on dangers posed by such apparently innocuous substances as paint, pool chemicals, pesticides, hobby supplies, motor oil, bleach and other household cleaners.

- Firemen have been injured when responding to residential fires involving an excess storage of flammables, paint products, pesticides, etc.

- Sewer and septic treatment systems can be biologically "upset" by the introduction of significant quantities of hazardous materials. If severe enough, the living organisms vital to the treatment process can be killed, thus sending a flood of conventional and toxic pollutants into the river or other sewage outlets.

- Household pets have died after drinking from puddles of antifreeze left on garage floors or thrown in drainage ditches. Ethylene glycol, used in antifreeze, is very attractive to animals because of its sweet taste.

Unfortunately, there is no nationally recognized method in use for the safe and economic disposal of residentially generated hazardous waste. However, the lack of a safe and economic disposal system for household hazardous wastes is becoming an increasing concern to local government officials nationwide. Some communities have already made an effort to address this need by establishing temporary collection sites for household hazardous wastes. After being collected by hazardous waste professionals, the wastes are then transported to a facility capable of disposing of hazardous wastes.

Although residentially generated hazardous waste disposal systems are only beginning to surface, waste oil recycling programs have been in operation (in California) over ten years. Such programs allow the home oil-changers to dispose of their waste oil at specific locations free of charge. Recycling programs for waste oil presently exist in several states. To date California, Oregon, Nevada, Washington, New Jersey, Maryland, Arkansas, Ohio, Michigan and Alabama all have such programs. The Association of

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Government Oil Recycling Officials (AGORO) have information on recycling programs conducted nationally. To find out if a waste oil recycling program is operating in your state, call AGORO. The east coast contact is Hilary Tatem in Annapolis, MD at (301)269-3355. The west coast contact is Guenther Moskat with the California Waste Management Board at (916)322-1443. California residents can also call the California Waste Management Board at (800)952-5545. This toll-free number will provide you with access to the name and location of a free waste oil recycler near you, as well as recyclers of aluminum, glass, etc.

One of the best ways to solve the disposal problem, however, is through prevention: buy only what you need and buy non-toxic products when they are available.

Information on the design and development of household hazardous waste disposal systems can be obtained by writing to Golden Empire Health Planning Center, 2100 21st Street, Sacramento, CA 95818, (916)731-5050.

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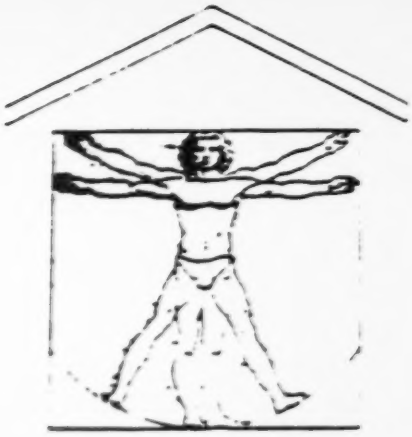

CONSUMER

CLEAN SHEET"

HOUSEHOLD PRODUCTS

What and Where Are They ?

Most of the products and furnishings we use in our homes and offices today contain chemicals. In fact, the average home today contains more chemicals than did the average chemical laboratory of 100 years ago.

When we use these modern products, some chemicals are released into the air right away; others, only gradually over time.

The chemicals released into indoor air can cause harmful health effects, from slight discomfort (like headaches, irritations of the skin, eyes, nose and respiratory system) to more serious injury and death. In controlled experiments, some of these compounds have caused cancer and other serious health problems in animals. Many of these chemicals are very new, so we do not really know what health impact may result from long term everyday exposure to them.

We can take some steps to reduce our exposure to the many chemicals which are released into our indoor environments. You should secure adequate ventilation before performing activities which generate high levels of chemicals indoors, such as painting and developing photographs. Alternative products and maintenance can minimize the use of some of these substances.

The following chart lists some of the products responsible for some of the chemicals which contribute to pollution of our indoor environments. Also provided are the health effects which may result from exposure, as well as alternative products that can reduce or eliminate exposure to the chemicals.

** Source: Excerpt, Department of Consumer Affairs, Consumer Clean-Up Kit, 1982. For a complete kit, send $1 (in postage) to Clean-Up Kit, P.O. Box 310, Sacramento, CA 95802 .

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HOUSEHOLD PRODUCTS

PRODUCT	HEALTH EFFECTS	WHAT YOU CAN DO
Aerosol spray products, including many different kinds of health, beauty and cleaning products	Aerosol products release particles in air that can be inhaled into your lungs and then absorbed into your blood stream. These particles can give you headaches, nausea, shortness of breath, eye and throat irritations, skin rashes, burns, lung irritation, liver damage, heart problems and possibly death. You should store these containers away from heat. Aerosol products will explode if they are exposed to heat, causing burns and very serious injury.	You can buy products in a non-aerosol form. Most products also come in creams, solids, liquids and pump sprays. They will also save you money because aerosol products are expensive. If you use aerosol products do not inhale them. Make certain aerosol containers are not exposed to heat.
Chlorine bleach	Chlorine bleaches can irritate and burn your skin and eyes. Even the fumes from chlorine bleach are irritating to your eyes and nose. Never mix chlorine bleach with ammonia, vinegar, toilet bowl cleaners, or other substances to make a strong cleaning solution--these mixtures produce very dangerous gases that can be deadly.	If you use chlorine bleach, handle it carefully. Instead of using chlorine bleach as a cleaning agent, make your own cleaning solution by mixing baking soda in water.
Paints	Chemical components in paints can irritate your eyes, skin and lungs. Inhaling paint fumes can give you headaches and nausea. Other chemicals in paints can cause respiratory problems, muscle weakness and liver and kidney damage. Some paints are flammable.	If you can, paint items outside. When you paint indoors, make certain you have adequate ventilation. Use of water soluble paints can eliminate the need to use paint thinners which contain additional toxic chemicals.
Shoe Polish	Some shoe polishes may contain nitrobenzene and other extremely dangerous chemicals. Exposure to these chemicals can cause vomiting, and shallow and other severe breathing problems. If you drink alcohol and are exposed to these chemicals which are absorbed through skin contact, death can result.	Read the product label. Do not buy shoe polish which doesn't list the contents, and don't use those products which contain trichloroethylene, methylene chloride or nitrobenzene. After polishing your shoes, make certain they are dry before wearing.
Hobby Materials: Clay and stone	If you inhale clay or rock dust you can develop respiratory problems or lung cancer.	Kilns should be vented outdoors. You should wear a dust mask when grinding materials. Make certain you have good ventilation if you work indoors.

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HOUSEHOLD PRODUCTS
(continued)

PRODUCT	HEALTH EFFECTS	WHAT YOU CAN DO
Hobby Materials: Papier-Mache	Some supplies used in papier-mache materials contain asbestos. If inhaled, asbestos can cause cancer.	Avoid using products containing asbestos.
Hobby Materials: Metal work	Hobby activities using metal materials often involve the use of dangerous chemicals. Many of these chemicals are eye, skin and respiratory tract irritants. Some can cause poisoning.	Wear goggles and gloves. Use an exhaust fan while welding metals. Work only in a well-ventilated area.
Hobby Materials: Glues and epoxy	These substances are flammable. They are skin and lung irritants, and can make you more sensitive to a number of other substances. Some people have died after deliberately inhaling fumes from these products.	Read the product labels carefully. Wear gloves when you use them and make certain you have good ventilation. Store these products away from heat and children.
Hobby Materials: Photography supplies	Many of the chemicals used to develop photographs are very dangerous. They are flammable and can cause skin, eye and lung irritations. If swallowed, they cause poisoning. Many of these chemicals are acids which can burn and blind you. Some of these chemicals cause cancer in laboratory animals.	Work with these materials only in a well ventilated area. Wear goggles and gloves. Store these chemicals in unbreakable containers away from heat. Store acids in non-metal containers. Never add water to acid to mix. Avoid products that contain benzene.
Rug and upholstery cleaners	These products contain some chemicals which, when inhaled, can cause nausea, anemia, liver damage, convulsions and possibly coma.	Clean rugs and upholstery with a soap or non-aerosol shampoo. Wear gloves and make sure you have ventilation during the cleaning process.
Non-phosphate detergents	These products are highly alkaline and they can cause skin and eye irritations. They are very dangerous if they are swallowed.	Use soap. If you substitute and use phosphate detergents remember, they build up and pollute our water systems because phosphates are not biodegradable.
Oven cleaners	Oven cleaners contain lye and other strong chemicals that can irritate and burn your skin and eyes.	Wipe your oven out after baking, this can reduce the need to use these strong cleaners. You can clean your oven with a home made solution of ammonia or baking soda dissolved in water. Apply this solution to the oven (be careful with ammonia!), wait and wipe off with a damp cloth.

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PRODUCT	HEALTH EFFECTS	WHAT YOU CAN DO
Furniture and floor polish	These products contain chemicals, such as mineral spirits and petroleum distilates, that can irritate your skin, eyes and nose. Some of these chemicals can cause photosenitization (sensitivity to light). These products are often very flammable.	You can use soapy water to clean, and a soft cloth to shine some items. You can make your own polish by melting carnauba wax and mixing it with mineral oil.
Air fresheners	These products contain chemicals which can irritate and burn your skin. They also interfere with your natural sense of smell.	Open a window to ventilate unpleasant odors. A dish of hot vinegar can remove room odors. Also, a bouquet of flowers can give your room a pleasant smell. Put a box of baking soda in the refrigerator to remove strong odors which start there.
Spray fabric finishes	These products are dangerous--if you get them in your eyes, the eye's natural tearing process cannot wash them out. This can cause severe eye damage.	Although not nearly as convenient, apply liquid fabric finishes with a brush. This is much safer.

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CLEAN AIR INDOORS

by Michael Lafavore

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Tighter houses have one potential side effect: trapped pollution

SOMETHING'S IN THE AIR

It was supposed to be a model home, a monument to energy efficiency that would make architects and contractors sit up and take notice. Built in 1977 in Carroll County, Maryland, with a HUD grant, the 1200-square-foot house was as tight as you could get. All windows were triple-glazed and the basement was 50 percent below grade. Each door and window was caulked and weatherstripped, and a continuous vapor barrier wrapped the interior. No detail was ignored. The bathroom exhaust fan was equipped with a damper, and the electrical outlets were surface-mounted so the walls wouldn't have to be pierced. It seemed that the designers had thought of everything.

Except indoor air pollution.

The first indication that something had gone wrong was the humidity inside the house. It sometimes climbed as high as 80 percent, and mildew began to grow in the corners. Scientists from the University of California's Lawrence Berkeley Laboratory were called in to test the air quality. What they found was rather alarming. Levels of formaldehyde fumes from plywood, particleboard, and furnishings were well above safe standards. The amount of radon, a radioactive gas that emanates from soil, brick, and concrete, far exceeded the upper limit set by the federal Environmental Protection Agency (EPA). And nitrogen dioxide concentrations from cooking and smoking were nearly twice those of the air outdoors. In short, the house was *so* tight, it had bottled up all the pollutants generated indoors. As Dr. James Berk, one of the scientists who tested the house, put it, "I certainly wouldn't raise my family there."

The Maryland house served as an early warning that tightening houses to save energy brings with it an unforeseen set of problems. But it was by no means unique; more energy-efficient houses were tested and the results were much the same. A recent General Accounting Office study concluded that the air in many American homes today is two or three times more polluted than the air outdoors.

The problem may be new, but the pollutants aren't. Formaldehyde has been around for more than 100 years. Radon is as old as the earth itself. It's just that in leaky old houses, the pollution didn't have a chance to hang around. Air from outdoors would seep in through cracks and leaks, constantly replacing the indoor air. House ventilation rates are usually measured in air changes per hour (ACH)—the number of times each hour that indoor and outdoor air switch places. In the average American house, that rate is ½ to 1½ ACH. But it's not unusual for new, very tight houses to exchange all their air only once every five hours or more. The air stays around longer, and so do the pollutants.

There aren't any statistics on how many illnesses indoor air pollution causes each year. More often than not, symptoms go undiagnosed, or are attributed to something other than air pollution. Two of the most common symptoms are a sore throat and stuffy nose. It's natural to think you've caught a cold. Depression is another symptom. (But with heating oil well over a buck a gallon, who isn't depressed?) Complaints that have been linked to indoor air pollution include: headaches, nausea, dizziness, rashes, forgetfulness, irritability, anxiety, difficulty concentrating, lung irritation, muscle aches, sore joints, sweating, restlessness, and antisocial behavior.

Exactly what are these harmful things that end up in our home's air? In addition to radon and formaldehyde, there are carbon monoxide and nitrogen dioxide from gas stoves, heaters, and appliances. Pipe, cigarette, and cigar smoke introduces more carbon monoxide, as well as hydrocarbons, nicotine, arsenic, benzopyrene, and tiny soot particles. There are fumes and gases from the arsenal of household wonders we buy to kill bugs, destroy germs, wipe out mildew, and kayo ring-around-the-collar. Dr. Alfred Zamm, author of the book *Why Your House May Be Hazardous to Your Health*, (Simon & Schuster) goes so far as to claim our homes are "mini-Love Canals—dumping grounds for toxic wastes."

The difference is, there wasn't much the unfortunate people living near Love Canal could do about their problem. They had to move elsewhere. But there's plenty the rest of us can do to clean up the air in our homes. It's not necessary to live like a caveman to enjoy a healthy indoor environment. It's more a matter of eliminating as many sources of pollution as you can, especially if your house is a tight one. Start small, tossing out a few household chemicals at a time. Become more aware of what you bring into the house. And what might already be there.

Before you do battle, you've got to know the enemy. Here are the dossiers on some of the worst offenders.

Formaldehyde

When formaldehyde was discovered in 1867, it was the greatest thing since the steam locomotive. In addition to being ridiculously cheap to manufacture, formaldehyde is a great bonding agent, a fungicide, and a preservative. By 1981, there were more than 6 *billion* pounds of the stuff made yearly. It had found its way into an enormous number of products, such as plywood, particleboard, carpet backing, cosmetics, permanent-press

PHOTOS BY MITCH MANDEL

clothing, fertilizer, towels, hair sprays, grocery bags, newsprint, soap, and household disinfectants. Somehow it even ended up in toothpaste.

All this, despite the fact that the pungent, colorless liquid is quite unstable and is listed in the *Handbook of Industrial Toxicology* as "highly toxic." Drinking less than an ounce can kill you.

The human body is very sensitive to formaldehyde fumes. Most people's eyes water when concentrations are as low as 1 part formaldehyde in 100 million parts of air. Exposure to even small amounts of the gas is known to cause lung irritation, nausea, vomiting, drowsiness, sore throat, headache, and fatigue.

There's evidence that perfectly healthy people can become sensitized to formaldehyde after heavy exposure. In effect, they become allergic to it and must avoid all further contact. Trouble is, formaldehyde is pretty hard to get away from. More than a third of the amount produced annually winds up in wood products. Urea-formaldehyde resin is what holds interior-grade plywood and particleboard together. Phenol formaldehyde, which is more expensive, is the bonding agent in exterior-grade plywood. Because of the amounts used, there are always formaldehyde gas emissions ("outgassing") from these products. Urea formaldehyde outgasses at least 10 times more fumes than phenol formaldehyde. Urea formaldehyde emissions are increased when the resin gets wet or is heated. Levels usually reach their highest in new homes when the heat is first turned on.

Outgassing from plywood and particleboard can go on for months, or even years, according to Dr. Thad Godish, director of the Indoor Air Quality Research Laboratory at Ball State University. "After two or three years, the emissions level off," he says. "But there's no evidence that they ever stop completely. My guess is that [plywood and particleboard] will still be outgassing after 20 or 30 years."

Godish says particleboard subflooring is the biggest source of formaldehyde fumes in most homes, followed by wall-to-wall carpeting. But it is urea foam insulation that has done the most to tarnish formaldehyde's reputation. Made by mixing formaldehyde resin with air and hardening agents, the foam was pumped between the wall studs of 500,000 American houses in the 1970s. Soon after the insulation became popular, the Consumer Product Safety Commission (CPSC) began to receive reports of homeowners suffering from burning eyes and noses, headaches, constant drowsiness, and flulike symptoms. Before foam insulation fell from grace, the CPSC had gotten more than 1600 complaints. Last February 22, the CPSC finally voted to ban the use of urea formaldehyde foam insulation.

Some of the victims, including Judy and David DeCourcy, of Gloucester, Massachusetts, were driven from their homes forever by the fumes. "I felt like I was running a hospital ward," says Mrs. DeCourcy. "I was terribly ill for weeks with what I thought was the flu. But everybody else in the family was sick, too, so I was constantly running around taking care of them. It was a nightmare."

Despite the headlines, the people most at risk from formaldehyde fumes are not those with the insulation, but the 20 million Americans who live in mobile homes. Con-

In the Living Room

1. Benzopyrene from tobacco smoke
2. Carbon monoxide from tobacco smoke
3. Formaldehyde from carpets, drapes, furniture, plywood in subflooring and paneling, tobacco and wood smoke
4. Nitrogen dioxide from wood and tobacco smoke
5. Radon from brick or stone fireplace
6. Naphthalene and paradichlorobenzene from moth balls in closet

A-38

structed with large amounts of plywood and particleboard, most mobile homes also contain furnishings loaded with the chemical. What makes matters worse, mobile homes are usually constructed more tightly than conventional houses. Dr. Peter Breysse, of the University of Washington, has tested more than 600 mobile homes and found "very few" that did not contain significant levels of formaldehyde. In some cases, those levels were more than *100 times* higher than what is considered safe.

There's no way to avoid contact with formaldehyde, no matter what type of house you live in. But good ventilation can protect you from the fumes (more on that later). You can also limit your exposure. Dr. Godish suggests using only exterior-grade plywood indoors and covering all exposed plywood with latex-based paint. For more severe problems, like those in mobile homes, the Mortell Company (550 N. Hobbie Ave., Kankakee, IL 60901) is marketing a formaldehyde vapor-barrier sealant called Hyde-Chek. It's clear like varnish, but contains a chemical that breaks down formaldehyde into harmless carbon dioxide and water. A 2-gallon container of the sealant, enough to cover approximately 400 square feet, sells for about $20. As you might expect, they usually sell it at mobile-home supply shops.

Indoor Combustion

When there's fire, there's smoke. And when the fire is indoors, the smoke you can't help but breathe may contain nasty things like carbon monoxide, nitrogen dioxide, hydrogen cyanide, and sulfate. It's not at all unusual for indoor combustion to cause nitrogen dioxide levels that exceed national air-quality standards.

Fireplaces and unvented kerosene space heaters do their share of producing these pollutants indoors, but by far the worst offenders are gas stoves. "They're like having a fireplace with no chimney in the middle of the room," says Dr. Zamm. A study at the Lawrence Berkeley Laboratory found that gas stoves released large amounts of pollutants into the indoor air. The emissions were highest during the warmup period in stoves that didn't have hoods vented to the outdoors. Top burners produced more pollution than ovens.

Fireplaces and wood-burning and coal-burning stoves can also contribute to fouling indoor air. A well-installed airtight woodstove or coal stove shouldn't pollute much, but a crack in the stovepipe can leak smoke and particles indoors. Open fireplaces are far worse. Downdrafts and changes in air pressure can easily push pollutants into the house. A test conducted in Boston found that the quantities of breathable particles in several homes were three times higher on days when a fireplace was used.

Ordinarily, gas furnaces produce little or no indoor pollution because the exhaust is vented outdoors by the chimney. It's only when there's a defect in the system—a cracked heat exchanger or blocked flue—that trouble can arise.

Attached garages are a frequent source of indoor air quality problems, particularly if they are located underneath the living quarters. Imagine a situation in which someone starts a car in the garage, then goes back inside for a few minutes while the car warms up. Exhaust fumes leak into adjacent rooms, filling them with carbon monoxide.

The dangers of indoor combustion have been documented. A few years ago, British researchers did a study of

In the Basement and Laundry Room

1. Benzene and carbon tetrachloride from spot cleaner
2. Carbon monoxide and nitrogen dioxide from gas dryer
3. Chlorine fumes from bleach
4. Formaldehyde from soaps, plywood, plastics
5. Lye from drain cleaner
6. Radon from concrete walls

In the Kitchen

1. Ammonium hydroxide from window cleaner
2. Carbon monoxide from gas stove
3. Formaldehyde from gas stove, particleboard in cabinets, curtains, wallpaper, plastic appliances
4. Hydrogen cyanide from gas stove
5. Nitrogen dioxide from gas stove
6. Potassium hydroxide from spray oven cleaner
7. Propane, butane, nitrous oxide from aerosol sprays
8. Sodium lauryl sulfate from carpet shampoo

5-to-11-year-old school children. They found that the kids living in homes with gas stoves had more colds, bronchitis, and respiratory ailments than those children whose parents cooked with electricity. A six-city study of even younger children in the United States came up with similar results.

As with any indoor pollutant, the best control for combustion emissions is adequate ventilation. A range hood that vents stove exhaust outdoors can remove 60–87 percent of the gaseous pollutants, according to Greg Traynor of the Lawrence Berkeley Laboratory. However, stove vents that merely recirculate air do very little good.

Stoves with pilot lights constantly leak small amounts of pollutants into the house. In some cases, the pilot lights can be extinguished and the stove lit with a match or flint striker. Ask your local gas utility if this is possible on your stove. Some of the newer gas ranges on the market don't use pilot lights—a good idea that will save money as well as lungs.

Radon

Until recently, most of us were blissfully ignorant of radon. It's always been around, emitting small amounts of radiation from soil, stone, and water. Some got into houses via building materials, water supply, and cracks in foundations, but with ventilation rates what they used to be, it wasn't inside long. Now, with tighter construction and weatherproofing, we can't afford to ignore radon any longer. A sampling of energy-efficient houses by General Electric found radon levels three times higher than in conventional homes. A government study concluded that when the air-exchange rate in a house was decreased from 1 to ½ ACH, radon concentrations doubled.

Let's backtrack a bit and take a look at what radon is and where it comes from. The radioactive gas is created as radium, a trace element in many soils and minerals, decays. The gas fills the pores of the soil and diffuses into air, water, and natural gas. Certain areas of the nation, particularly those with rich granite and phosphate deposits, have particularly high levels. Florida, Tennessee, Maine, Montana, New Hampshire, Colorado, Pennsylvania, and parts of Texas are among the known trouble spots.

Radon gets into houses in a number of ways. Often it's *part* of the house, contained in the brick, stone, plaster, sand, and gravel used in construction. The gas can also come directly from the soil, seeping into the house through cracks in the basement and foundation. Houses with crawlspaces generally contain less radon than those built on concrete slabs, mainly because the air in the crawlspace dilutes the gas. Earth-bermed houses, like the above-mentioned test house in Maryland, have been known to have high levels of radon, for obvious reasons.

To a lesser extent, homes can pick up radon from their water supply. The gas dissolves into the water in the ground,

In the Bathroom

1. Aluminum chloride from deodorant
2. Formaldehyde from carpet, curtains, cabinet, shampoo, toothpaste, disinfectant
3. Hydrocarbons from aerosol sprays
4. Radon from water in sink and tub
5. Vinyl acetate polymer from hairspray
6. Trichloroethylene in shoe cleaner

then dissolves into the air when you fill the bathtub or sink.

The fear is that sufficient quantities of radon cause cancer in humans. Apparently, the gas attaches itself to dust; when the dust is breathed into the lungs, it emits radioactive alpha particles. No one knows how much radon we are breathing, or what effect it might have. At this time, there is only enough evidence to indicate that the matter deserves serious consideration. A Canadian survey estimated that 10 percent of Canada's houses may have excessive radon levels. And tests done in several thousand homes in eastern Pennsylvania uncovered radon levels, in 15 percent of the buildings, that could pose the same lung-cancer risk as smoking a pack of cigarettes a day.

"Right now it looks like radon is a localized problem in certain areas with high concentrations of natural radon," says Dr. James Berk of the Lawrence Berkeley Laboratory. "There's a real potential for problems in tight houses, but we don't know yet how serious it is."

If you have your house tested and find too much radon (see "Knowing For Sure: Home Tests"), levels can be reduced by increasing the ventilation, sealing cracks in the basement, and painting exposed interior concrete with a polyurethane or epoxy sealant.

Smoking

Everyone knows that smoking is bad for the health. Even if you're not among the third of the population that smokes, the 615 billion cigarettes puffed yearly can have a profound effect on your well-being. More than 2000 compounds have been identified in tobacco smoke, and not one of them is good for you. The lineup includes tar, nicotine, carbon monoxide, formaldehyde, nitrogen dioxide, nitrosamines, and cadmium.

It's not just the person on the filter end of the butt who's breathing all that stuff. Doctors refer to the rest of us as "passive smokers." We're also breathing the smoke, and getting as much as one-tenth of the pollutants. There's even some evidence that this "sidestream smoke," as it's called, contains more of some harmful substances. In Japan, wives of heavy smokers (a pack or more a day) were found to have higher lung-cancer rates. Children of smokers are more likely to have bronchitis, pneumonia, and other respiratory problems.

The added danger of living with a smoker in a tight house is obvious. The smoke and particles from tobacco don't disperse as quickly and you're exposed longer. The only good thing about the matter is that smoking odors can clue you in to an air-quality problem in your home. If the smell seems to hang around for an unusually long time, other pollutants you can't smell may be staying too long as well. That means you need to get more air moving through the house. And, with any luck, curtail the amount of smoking.

Household Products

Last year, they remade that old '50s science fiction movie, *The Incredible Shrinking Man*. This time it was Lily Tomlin as *The Incredible Shrinking Woman*. Instead of being reduced to the size of a thumbtack by the obligatory radioactive cloud, the heroine is down-sized by too much exposure to household chemicals. As yet, nobody outside of Hollywood has linked aerosol sprays and harsh cleaners to shrinking, but doctors say the chemicals can cause a variety of other ailments, among them headaches, depression, rashes,

In the Garage and Workshop

1. Acetone and hydrocarbons from paint thinner
2. Insecticide fumes from yellow pest strip
3. Lead from gasoline
4. Methylene chloride and phenols from paint stripper
5. Toluene from spray paint
6. Carbon monoxide from auto exhaust

eye injury, burns, nausea, and rapid heartbeat.

It seems that we're spraying, misting, and scrubbing our homes with an ever-growing number of chemicals, all promising to make our lives easier. In the home of Mr. and Mrs. Average American are 45 aerosol sprays. Once a day or more, two of the sprays are used within a half-hour of each other. You name it and someone has stuck it in a spray can.

All the ingredients are seldom listed on the cans, but you can bet that there's potassium hydroxide in oven cleaners, tetrachloroethylene and petroleum-based solvents in spot removers, and toluene, xylene, or methyl chloride in spray paints. The contents of aerosol cans, under about 40 pounds of pressure per square inch, fly out of the nozzle as a very fine mist. The particles can be breathed very deeply into the lungs, after which they head straight for your bloodstream.

The propellants themselves, which can make up 60–70 percent of the can's contents, have also sparked some controversy. The propellant used to be fluorocarbons, until evidence mounted that they could have an adverse effect on the atmospheric ozone layer. Fluorocarbons have been replaced with propane, butane, nitrous oxide (laughing gas), and methylene chloride.

A book called *The Household Pollutants Guide* ($3.50, Anchor Press; Doubleday Bookshop, 673 Fifth Avenue, New York, NY 10022) tells the story of one poor woman who dragged her small oven outdoors to clean it because the aerosol oven cleaner she used always gave her a headache. Actually, she had the right idea—plenty of fresh air to dilute the fumes—but she got turned around somewhere. Instead of taking the oven outdoors, she should have brought more fresh air indoors. If you use harsh cleaners and chemicals indoors, be sure that the room is well ventilated with an exhaust fan.

As a general rule, good ventilation can eliminate most indoor air pollution problems. But how much ventilation is adequate? Most experts seem to agree that you're safe if your house gets at least one air change every two hours (½ ACH). An ACH of ½ is what the average homeowner can achieve by caulking and weatherstripping an existing home. An existing home can be tightened further by the use of special equipment and techniques, and possibly by plain old diligence in tracking down all drafts and sealing cracks. Much greater tightness is possible in new home construction when a plastic vapor barrier is carefully stretched across the inside faces of the framework before interior finish is applied. This technique, done with perfection in some experimental Canadian construction, resulted in a measured ACH of .1—one air change every ten hours. So you see the horns of the dilemma: Extremely low air-exchange rates are great for energy-efficiency, but not so great if they create a polluted home. But don't get hung up on the horns. There are solutions.

If your house is excessively humid, or if your family experiences pollution-related symptoms, perhaps your house is tighter than ½ ACH. The most popular solution in most cases is an air-to-air heat exchanger, which allows you to ventilate the house without losing much of the heat. When one of these devices was installed in the Maryland house mentioned at the beginning of this story, the pollution and humidity problems disappeared.

If indoor air quality sounds like so much gloom and doom, don't be discouraged. All of us get bombarded with so many health warnings these days, there's a growing temptation to throw up our hands and say, "I surrender. Nothing is good for me anymore." But when you think about it, your house is the one place in this world that you can control. There isn't much you can do as an individual about spewing smokestacks and toxic-waste dumping grounds. But there's plenty you can do about cleaning up your home environment. In the following stories, we'll talk more about the solutions at hand. ■

Knowing For Sure: Home Tests

How do you tell if you have an indoor air pollution problem? A good question, considering that many pollutants are colorless, odorless, and don't automatically cause coughing fits when you're exposed to them. The symptoms are often vague—depression, lack of energy, irritability. Sometimes pollution can make you feel like you've got a mild cold, with a headache, sore throat and nose, and watery eyes.

The first victims of house sickness are usually housewives and small children, because they spend so much time indoors. Those who are out of the house for long periods during the day may notice that their symptoms return soon after arriving home. If the whole family seems to feel extraordinarily better after a vacation away from the house, suspect indoor air pollution.

Dr. Thad Godish of Ball State University suggests a simple test to confirm your suspicions: "Open as many windows in the house as you can and get continuous ventilation for about a week," he says. "Then close the place back up for another week. If the symptoms go away when the house is open, and come back when it's closed, it will confirm that something in the house is causing the illness."

The next step is to narrow down the possible offenders. If you recently bought new carpets or drapes, installed foam insulation, or built an addition with lots of plywood or particleboard, perhaps formaldehyde is causing the trouble. Both DuPont and 3M are making formaldehyde monitors that can measure levels of the gas in buildings. The small, plastic devices are hung in a room for a week or so, then analyzed. 3M's monitor costs around $35. That price includes the unit, laboratory analysis, and a report (3M Center, OH and S Products Division, Bldg. 220-7W, St. Paul, MN 55144). DuPont's formaldehyde badges come in a box of 10, which sells for $207, not including analysis (E.I. du Pont de Nemours & Co., Inc., Applied Technology Division, Clayton Building, Concord Plaza, Wilmington, DE 19898).

Carbon monoxide detectors to measure emissions from gas appliances, fireplaces, and woodstoves, are a little easier to come by. A product called Deadstop Carbon Monoxide Detector can warn of even small amounts of the gas. The adhesive-backed strips have a small circle of chemically impregnated resin, which darkens on exposure to carbon monoxide. The darker it gets, the more gas is present. The detectors are available by mail for $1.10 each from Sporty's Shops, Clermont County Airport, Batavia, Ohio 45103 (include $2.50 for shipping).

Radon is one of the nastiest indoor air pollutants because it doesn't cause any immediate symptoms, but long-term exposure can lead to serious illness. A California company, Terradex Corporation (460 N. Wiget Lane, Walnut Creek, CA 94598), is marketing Track Etch radon monitors. The detectors are placed on a wall in the house for three months, then sent back to the company for analysis. The results come back in the rather indecipherable measure of picocuries per liter. Here's how to translate that into usable information: One picocurie of radon in a house carries about the same lung-cancer risk as smoking one cigarette per day. One of the detectors, with analysis, costs $50.

Which brings us to a final point about these devices. If you live in an energy-efficient house built on phosphate-reclaimed land in Florida, or atop a big outcropping of granite, $50 for a radon detector is a small price to pay for peace of mind. On the other hand, if a relatively leaky building in a suburb of Boise is where you call home, there's probably no need to invest the money. The same goes for the formaldehyde sniffers: If your body doesn't clue you into a problem, there probably isn't one. ■

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You may be playing with some rough stuff

HOBBY HAZARDS

If your idea of a good time is leaping out of airplanes at 7000 feet or poking around in unmapped caves, no one has to tell you that your hobby is not without risks. On the other hand, if you prefer to spend your leisure time at less daring pursuits—say, refinishing an old bureau or making clay pots—you probably don't think you're living dangerously.

Toby Sedman of Brockton, Massachusetts, certainly never considered her hobby of making stained-glass objects particularly adventurous. Nothing in any of the books or instruction sheets gave any indication that she should take special precautions when handling the lead strips used to hold the pieces of colored glass together. So she never associated her craft with the nausea, cramps, headache, and irritability she began experiencing. Not, at least, until her doctor said she was suffering from lead poisoning.

Luckily, her condition wasn't serious. After a month away from her hobby, she was able to return to it. But not before she had improved the ventilation in her work area and bought rubber gloves and a face mask to wear when handling the lead.

Working with stained glass isn't the only hobby that can make you sick. Health hazards have been linked to pottery and jewelry making, furniture refinishing, woodworking, painting, and other leisure pastimes. When such activities include sanding, grinding, welding, or handling noxious glues, solvents, and strippers, air quality is affected in a big way.

"The average hobbyist working in his kitchen or basement probably isn't aware that he could be filling the air in his house with dangerous substances," says Dr. Michael McCann of the Center for Occupational Hazards, a private organization. "We're talking about millions of people who might be making themselves sick without knowing why."

Furniture refinishers, for example, may not know that most paint strippers contain methylene chloride, a potent neurotoxin that can cause dizziness, headache, blurred vision, and depression when used without adequate ventilation. And many potters are probably unaware that some clays contain up to 40 percent silica, the dust from which can, over a period of years, damage lungs and cause symptoms similar to those of asthma. Nor may they realize that their glazes are made with heavy metals such as lead, lithium carbonate, cadmium, barium, and nickel.

Here are a few more things you may not have been told about popular hobbies.

Jewelry Making Silver solder, a brazing alloy used in making many types of silver jewelry, often contains cadmium. When the solder is heated, cadmium oxide fumes are produced. Breathing these fumes can lead to headaches, fatigue, dizziness, nausea, and muscle cramps, symptoms that are frequently mistaken for the flu. Cadmium-free solders are available.

Painting Many oil-based paints are made with solvents and hardening agents that can cause flulike symptoms when inhaled. The problems are worsened when the paint is sprayed, filling the air with tiny particles. Water is the solvent in latex paints; they're usually safer.

Woodworking Breathing a little sawdust probably won't hurt you, but a steady diet of the stuff can impair the functioning of your lungs. And the dust from some woods, among them beechwood, boxwood, and cedar, is potentially toxic in large quantities. Prolonged exposure to redwood dust, for example, can bring on pneumonialike symptoms. A cheap, paper filter mask from the hardware store will keep most of the sawdust out of your lungs.

Paint strippers made before 1978 may contain up to 50 percent benzene (or benzol), a nasty chemical that has been linked with leukemia. Manufacturers voluntarily removed it from their formulas, but there may be some benzene-containing strippers still stored in basements. If you've got any hanging around, get rid of it.

Finally, be careful whenever you're sanding or melting old paint off a piece of wood. If the paint contains lead, you'll be breathing it.

None of this means you've got to give up your hobbies and watch television. But it *does* mean that you should practice your hobbies safely. Start by improving the ventilation in the room where you work. We've all read the warning on cans, "Use with adequate ventilation." But what does that mean?

"Most people think adequate ventilation is opening a window," says Dr. McCann. "But that's not even *minimum* ventilation. The breeze from outside could just as easily be blowing fumes into your face."

Using an exhaust fan sized for the room is more like it. In the warm weather, you may even want to spray-paint or strip furniture outdoors. Paper filter masks will keep dust out of your mouth when you're sanding wood or stone, but they won't do a bit of good against chemical fumes. If you can't or won't ventilate, consider a more elaborate mask with one or more filter canisters. Some hardware stores carry these. If yours doesn't, che the Yellow Pages under "Safety Equipment Suppliers."

Wearing rubber gloves is a hassle, but they can prevent your skin from absorbing lead or other harmful things. If you can't wear gloves, be sure to wash your hands when you're finished and before eating or smoking.

One more thing: Start reading labels! The best time to do this is before you buy supplies, so you can choose the least toxic materials. If most of the label is taken up by warnings, look for something else. The Center for Occupational Hazards (5 Beekman Street, New York, NY 10022, 212/227-6220) will help answer your questions and steer you to safer materials.

Hobbies are supposed to make you happy and relaxed, not sick. To get the benefits of your hobby without the health hazards, take the proper precautions. ■

For Further Reading

Health Hazards in the Arts and Crafts, Society for Occupational and Environmental Health, Suite 450, 806 15th Street NW Washington, DC 20005; 1980

Safe Practices in the Arts and Crafts: A Studio Guide, by Gail C. Barazani, College Art Association of America, New York, 16 East 52nd Street, NY 10022; 1978

Art Hazards Newsletter, published by the Center for Occupational Hazards; $13 for a one-year subscription (10 issues)

MOTHER's Guide to Hazardous Household Substances

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Without chemicals, life itself would be . . . at the least, somewhat less convenient. Each day the average American uses (directly and indirectly) hundreds of laborsaving formulations, and even the conscientious consumer is likely to be coerced into pushing the buttons on a few spray cans. In the last 50 years, chemicals (that is, those of the synthetic variety) have become an integral part of the U.S. way of life—not to mention of our economy.

It would be easy to rail against the trend. After all, a hundred years ago people got along pretty well without an arsenal of aerosols. What's more, the harmful effects of chemical production and the disposal of its by-products may be the most serious environmental problems facing the country today. Indeed, there are frighteningly dangerous compounds that continue to be manufactured and used, despite widespread scientific knowledge of (and complaints about) their harmful effects. Only public outcry will bring grease to the wheels of regulation in a government bogged down in bureaucracy and badgered by commercial interests.

However, it's consumer self-defense (not action) that's the subject of MOTHER's May/June mini-section. As you'll learn in the following pages, federal regulation is no assurance of safety from a whole array of compounds many of us use in our own homes. We'll be discussing substances that are much more insidious than newsworthy contaminants such as dioxins or polychlorinated biphenyls (PCB's), even though they are much less dangerous on a per-unit basis. Most consumers are practically unaware of them, because the compounds may go unmentioned on labels or because their names are indecipherable. Some of the chemicals are additives that are known to be hazardous. Others are dyes or flavorings that have never been adequately tested. But the most sinister aspect of the proliferation of chemicals in the household is that most of us expose ourselves to these laborsaving elixirs for hours on end in our own homes every day. In effect, we live in chemical warehouses.

WHAT IS A CHEMICAL?

Over the last few years, a major chemical company has used advertisements in its attempt to make the point that since all matter is made up of *chemicals*, that term certainly isn't a dirty word. Whatever you may think of the firm's motivations, the ads do make a worthwhile point: Simply because a compound sounds complex, that doesn't mean it's dangerous. Unless you have a strong background in chemistry, you probably won't be able to tell a harmful substance from a beneficial one purely on the basis of its name. For example, vitamin B_6 (an essential nutrient) goes by the technical names of *pyridoxine* or *pyridoxine hydrochloride*, either of which is a fair mouthful to pronounce.

Likewise, simply being of natural (rather than synthetic) origin is no guarantee of a substance's safety. The ranks of suspected and known toxic and cancer-causing compounds are filled with plants and minerals. Generalizations really don't go very far when we're discussing hazardous substances. To make sensible decisions about the chemicals you live with, you'll need to be well armed with information.

WHAT IS HAZARDOUS?

There are a number of different and fairly obvious ways in which chemicals can harm us, but judging the *degree* of risk is a very difficult matter. Toxic compounds cause one or more of a variety of bodily malfunctions. Perhaps they depress the central nervous system, making us drowsy or even causing death. Or maybe they attack the liver, where they accumulate when they're cleaned from our blood. The question is, *how much* of a particular substance does it take to cause such harm? If an inordinately high dosage must be taken to harm a human, the substance may be considered toxic but not hazardous. Only if that toxicity level is within the range of normal human intake (and a large margin of safety is used in the calculation) is it considered hazardous.

The issue of toxicity is further complicated by the fact that bodily harm can be produced in a couple of different ways. A toxicant is said to be *acutely* toxic if it triggers a reaction soon after a single ingestion; a *chronic* poisoning may not produce symptoms until the compound has accumulated to a threshold level in the body—days, months, or years later.

Scientists have developed a system for denoting the comparative toxicity of substances. Known as "lethal dose, 50%" (LD_{50}), it indicates the amount of a compound that must be administered to cause *half* of the test sample to die. For obvious reasons, LD_{50} tests aren't run on humans; mice or rats are the most common "guinea pigs". The results can't be directly compared to human exposure, though, because animals don't necessarily react to toxicants in the same ways that people do.

The tested chemicals are also administered in different fashions—orally, by under-skin injection, directly into the stomach, etc.—which can influence the outcome of an experiment. A substance may not be readily absorbed through the skin, while inhalation may allow it to pass through lung tissue quite easily.

Furthermore, LD_{50} isn't necessarily a good measure of chronic toxicity. Though a large quantity of a compound may be required to produce immediate death, much smaller amounts may add up—over continous exposure—to life-threatening levels. (Lead poisoning is a good example of this phenomenon.) Extended, expensive studies are required to determine chronic effects.

There are further complications in the matter of determining the safety of a substance. For example, though allergy studies are seldom done prior to the introduction of a chemical to the market, many

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substances can have life-threatening effects on people with asthma. Also, in a process called *synergism* some comparatively innocuous chemicals may combine with others to increase the risk of each or to form a different (and more hazardous) substance. To date, the general population—that's *us*—is essentially the test sample for problems of this sort.

Furthermore, though the measure of a chemical's toxic ☠ or allergenic Ⓐ effect on humans is inexact, those techniques are models of precision compared with the process of calculating a compound's cancer-causing potential. First of all, there is the unanswered question of how cell mutation relates to cancer. If a compound produces genetic mutation in laboratory experiments, it's said to be *mutagenic*. If it produces cancer in humans or animals, it's said to be *carcinogenic* Ⓒ. Most, but not all, mutagens turn out to be carcinogens; so far, all carcinogens have proven to be mutagenic. Yet another type of mutating (but not necessarily cancer-causing) compound is a *teratogen* Ⓣ, which causes malformation in the fetus.

Substances that are labeled with a C are those that cause cancer in animals or humans. Those that cause allergic reactions in sensitive individuals are denoted by an A. Compounds that cause birth defects, spontaneous abortions, or other damage to animal or human fetuses have a T (for teratogen) next to them. All toxicants, hazardous either in small or large dosages, are marked with a skull and crossbones. You may also encounter two other symbols next to some compounds: An asterisk (*) indicates that dosages far higher than encountered in normal exposure are required to produce an adverse effect; suspected (but not confirmed) carcinogens and teratogens are labeled C? or T?; other questionable substances are marked with ? only.

Substances are tested for carcinogenicity by administering large dosages (usually hundreds or even thousands of times the amount found in normal human exposure) to laboratory animals over a period of a few weeks to a few years. It is assumed that the production of cancerous cells (if there is any) can be speeded up by increasing the dosage to very high levels. Industry isn't patient enough to wait 20 or 30 years to look for evidence of increased cancer from the use of a substance that they propose to put on the market. In addition, the life spans of most test animals are comparatively short. If no cancer is evident, then the substance is considered to be safe. But if some tumors show up, then the risk to humans is calculated by the dosage level and the incidence. The resulting figure estimates the number of cancer deaths per unit (usually thousands or millions) of population.

The Reagan Administration has attempted to change Food and Drug Administration and Environmental Protection Agency policy from a no-risk cancer stand to a cost-benefit one. Though the officials have been unsuccessful in developing a way of assigning dollar values to cancer deaths, regulations have been altered to allow a higher incidence of cancer from the use of some substances. The methods, regulations, and economics of determining the hazards of chemicals are nothing less than a morass; from our point of view they can probably be summed up thus: Will possibly hazardous compounds be considered innocent until proven guilty?

HOW TO USE THIS GUIDE

We've divided the subject matter of the Guide to Hazardous Household Substances into four sections, according to the locations in which you're likely to encounter different categories of harmful chemicals. You'll note as you read through the information that many of the substances are used in all sorts of consumer products. Formaldehyde, for example, is ubiquitous in the household. Therefore, for the sake of space, we'll often direct you to a previous discussion of a commonly occurring substance's effects.

Each room of our model household includes an introduction to the regulations that help protect us from the dangerous substances that might be found there. This is necessary because different wings of our government deal with food, cleansers, building materials, etc. In some cases, we'll find that there is, in effect, no regulation at all! For those of you who will use the compounds that make up the body of each section, the labeling requirements that the agencies impose on different types of products will be extremely important. Without labels, you can do little more than *suspect* what may be included in a product.

Of course, this manual can only highlight those toxicants and carcinogens that have been judged by experts to pose the most direct danger to you. There are a number of important areas that we've been forced to pass over, because not even these pages are enough to address all the hazards around the house. In general, we've tried to hit areas where consumers are least protected and most likely to be unaware of the existing hazards. Hence, we've not covered the synergistic reactions that can occur between common ingredients and prescription drugs. (Your physician should inform you of the interactions that are possible whenever he or she writes a prescription. In addition, an excellent reference to drug interactions can be found in Joe Graedon's *People's Pharmacy-Two* (Avon Books, 1980, $5.95).) Nor have we covered potentially dangerous household appliances, from microwave ovens to lawn mowers. All of the items listed in the following pages are *substances* that can cause you harm.

The lists have been compiled by sifting through mounds of books and reports to pinpoint those chemicals (of the thousands introduced annually) that are both dangerous and commonly used. Throughout the mini-manual we've tried to list sources of more information. You should know, though, that since the 1980 election it seems to have become increasingly difficult to gain access to such information. References in popular and technical literature have dropped to a mere trickle. To that extent, preparing this section has been very frustrating: All too often there are no concrete answers to the question of whether a substance is hazardous or not. Wherever there is doubt, we hope we've erred on the side of safety!

If you were to sit down and read this manual from beginning to end, you might come away with the impression that the situation is hopeless . . . that there's just no way to avoid hazardous substances. And it's true that most of us are going to be unable (or unwilling) to stay away from everything dangerous all the time. The point of this manual, though, is *not* to suggest that you should never again touch any of the things mentioned herein. Rather, we hope that you'll use the information to help recognize substances that may pose a hazard (even if it's small) and to limit your exposure to whatever degree is possible and practical. With knowledge, you can do your best for yourself and yours.

Someone's in the Kitchen With Dioctyl Sodium Sulfosuccinate

Food

The U.S. Food and Drug Administration (FDA) looks after the safety of our food and pharmaceuticals. Its legal basis is the Food, Drug, and Cosmetic Act of 1938—backed up by subsequent additions, including the Pesticide Chemicals Act of 1954, the Food Additives Amendment of 1958, and the Color Additives Amendment of 1960. For good reason, food is the most regulated of all consumer products, but the extent of protection may not be as great as you think.

Before an additive may be used in food, it must be demonstrated to be safe. The testing, however, is conducted by the industry that proposes to *sell* it, not by the FDA. Furthermore, there's a loophole in the Food, Drug, and Cosmetic Act's mandate for safety: Dangerous substances are prohibited from being added to food . . . except where they are "unavoidable" or "necessary in production" and are used in small enough doses that no apparent hazard is presented to test animals. As you can see, the mandate for safety is hazy.

With the later amendments to the 1938 legislation, an important section called the Delaney Clause was added. This regulation prohibits the use of *any* additive that has been found to induce cancer in animals or humans. The Delaney Clause was fought by the FDA, the American Medical Association (AMA), and the food industry. Their argument, of course, was that the stipulation of "no risk" is excessively restrictive: In their view, the benefits of some additives outweigh the hazards. Twenty-five years after its inception, the Delaney Clause is still under attack. Separate amendments proposed to Congress in October of 1983—by Orrin Hatch of Utah in the Senate and Edgar Madigan of Illinois in the House—have, with the help of heavy lobbying from the plastics, meat, and soft drink industries, attempted to strike down or replace the Delaney Clause. (If you plan to write to your representative to express your opinion about such changes to the Food, Drug, and Cosmetic Act, the pieces of legislation referred to are Senate bill S. 1938 and House bill H.R. 4121.)

Under the Food Additives Amendment of 1958, additives that were used previous to that time and that showed no evidence of harm were permanently listed as Generally Recognized as Safe (GRAS). Only substances added to the list after the year of the amendment's enactment were to be tested. During his administration, President Nixon ordered the FDA to conduct research on all food additives. This work has been going on since 1970 and is not yet completed, but periodic updates are made to the GRAS list. Items are classified as [I] demonstrated to be safe, [II] safe at present consumption levels, [III] the question of safety requires further study, [IV] evidence of hazard, and [V] not enough data. Nearly all of the additives that are listed below fall into categories III, IV, or V.

Food products have the most adequate labeling requirements of all the consumer goods that we're examining in this mini-manual. Each constituent used to formulate the product must be listed on the label in descending order of its percentage of the whole.

There are, however, a number of exemptions that "streamline" labeling. For one, "incidental" compounds used to process a food, such as flour bleaches, need not be listed . . . because they aren't present in the final product at more than trace levels. This disregards the fact that the processing chemicals may alter the nutritional value of food significantly.

There are also a number of "standardized" products that don't require labeling as long as their makeups are within the guidelines of the 20 or so additives allowed by the FDA. Dairy products provide examples of standardized nonlabeling. Manufacturers are also allowed to use general descriptions, such as "preservative", "antioxidant", "sweetener", "artificial flavor", and so on. Without the specific name, we have no way of knowing whether or not the compound used is one about which we should be concerned.

For further information on food additives, consult *A Consumer's Dictionary of Food Additives* by Ruth Winter (Crown Publishers, Inc., 1978, $4.95) or *The Food Additives Book* by Nicholas Freydberg and Willis A. Gortner (Bantam Books, Inc., 1982, $9.95).

Preservatives/Antioxidants

BHA (butylated hydroxyanisole): A compound used to prevent fats and oils from becoming rancid.

—Hazards: Enlarges the livers and kidneys of test animals. May cause enzyme changes that make the body more susceptible to cancer or that affect reproduction.

—Found mainly in: Baked goods, beverages, breakfast cereals, candy, chewing gum, gelatins, ice cream, potato chips, shortening, and vegetable oils.

BHT (butylated hydroxytoluene): Similar to BHA.

—Hazards: Same effects as BHA but at lower concentrations in rodents and dogs; higher concentrations required to produce effects in monkeys.

—Found mainly in: The same products as BHA.

Calcium disodium EDTA (ethylenediamine tetraacetate): Binds a number of minerals that can cause oxidation.

—Hazards: Can contribute to zinc deficiency. May cause errors in laboratory measurements. Sensitizes people with allergies and asthma. May have a synergistic effect with BHA/BHT. A suspected teratogen.

—Found mainly in: Canned crab, carbonated beverages, condiments, fruit drinks, margarine, processed fruits and vegetables, and salad dressings.

Nitrites, nitrates: Used to inhibit botulism-causing microorganisms; also used to improve color and flavoring.

—Hazards: May combine with amines to form nitrosamines, some of which cause cancer at low levels of concentration. Can inhibit the ability of blood to carry oxygen, especially in infants. Some forms affect fertility, reduce prenatal growth, and increase prenatal mortality. Used in forms bound with sodium, which has been shown to increase blood pressure.

—Found mainly in: Processed meats—such as bacon, corned beef, ham, hotdogs, luncheon meat, and sausage—and smoked fish and poultry.

Sulfiting agents: Potassium bisulfite, potassium metabisulfite, sodium bisulfite, sodium metabisulfite, sodium sulfite, and sulfur dioxide are used to bleach and preserve, to prevent browning, and to sterilize.

—Hazards: People with allergies or asthma may have severe reactions. Can cause vitamin B_1 and E deficiencies.

—Found mainly in: Fresh and processed vegetables, wine.

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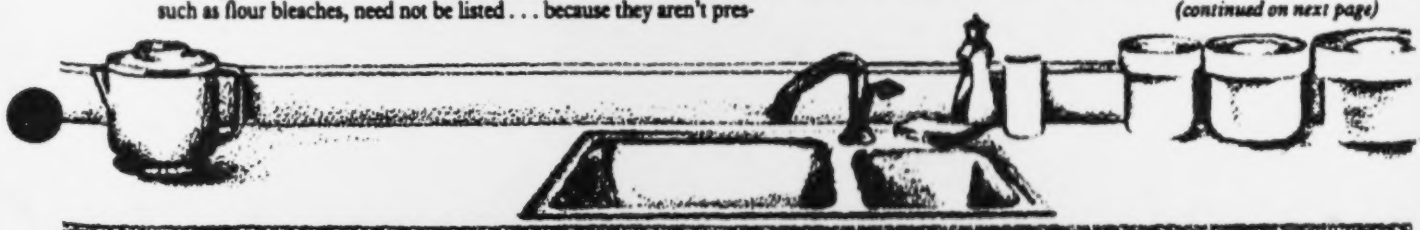

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Emulsifiers/Stabilizers

Aspergillus enzyme: Used in processes requiring enzymatic reaction.
C? —Hazards: Minimal data, but it may be metabolized into a carcinogenic substance.

—Found mainly in: Baked goods and cheese.

Baking powder: Used as a leavening agent in baked goods.
—Hazards: Contains aluminum, which has been associated with Alzheimer's disease, a form of senility.

BVO (brominated vegetable oil): Used to stabilize flavoring oils. Derived from corn, cottonseed, olive, sesame, and/or soybean oils.
—Hazards: Has caused damage to the hearts and livers of test animals and has increased fat deposits in their livers and kidneys; some forms have brought on testicular changes, reduced growth, and produced lethargy. Deleted from GRAS but still lawful for use.

—Found mainly in: Baked goods, citrus carbonated beverages and fruit juices, and ice cream.

Calcium peroxide: Used as a bleaching agent and to make dough stronger and more extendable.
C? —Hazards: Known to be mutagenic at high concentrations, but data are very limited.

—Found mainly in: White bread and rolls.

Carrageenan: Used to stabilize, thicken, and gel.
C? —Hazards: High dosages have caused fetal death in test animals. Some T? evidence of mutagenicity, carcinogenicity, and teratogenicity.

—Found mainly in: Cheese spreads, chocolate products, evaporated milk, ice cream and dairy confections, and syrups.

Casein: Used as a binder and extender, clarifying agent, and texturizer. A principal protein in cow's milk.
A —Hazards: Causes reactions in people allergic to cow's milk. Processing produces some lysinoalanine, which has caused liver damage in rats at low concentrations.

—Found mainly in: Frozen dairy desserts, soups, and infant formulas.

DSS (dioctyl sodium sulfosuccinate): Used as a wetting agent in one "dutched" cocoa process; also used as a laxative.
—Hazards: There is some evidence that it reduces growth rates of infants because of reduced lactation in the mother. Also causes gastrointestinal irritation. Cancer and mutation tests have not been done.

—Found mainly in: Some brands of "dutched" cocoa.

Glycerol ester of wood rosin: Used as a binder for flavoring oils, as a softener and plasticizer, and as a flavoring agent.
? —Hazards: No data available, nor are there any standards for its use.

—Found mainly in: Citrus beverages, chewing gum, frozen desserts, and gelatins.

Gums: Used to blend, stabilize, and thicken mixtures.
T —Hazards: Guar gum has caused deaths of pregnant test animals. Gum arabic (acacia) has caused some deaths of pregnant animals at very high dosages and is an allergen. Gum tragacanth has caused fatalities in pregnant test animals and can also cause allergic reactions. Carob (locust bean) gum has caused high incidences of death in pregnant test animals.

—Found mainly in: Ice cream, salad dressings, sauces, and other creamy food products.

Modified food starches: Used as thickening and gelling agents and to prevent lumping and sticking of powdered products. Produced by chemically treating starch.
—Hazards: Can cause diarrhea, slowed growth, and calcium deposits in the kidneys. Some are not very digestible. Maintenance of GRAS under consideration.

—Found mainly in: Baby foods and baked goods.

Oxystearin (modified glyceride): Used to blend, to clarify, and to prevent crystallization.
C? —Hazards: May cause testicular cancer; further study needed.

—Found mainly in: Salad oils.

Propylene glycol alginate: Used as a thickener, stabilizer, and defoaming agent.
T —Hazards: Has caused maternal and fetal death in mice at high dosages.

—Found mainly in: Frozen desserts, ice cream, and salad dressings.

Flavorings/Colorings

Artificial food coloring: These substances need only be listed as "artificial color", except for FD&C Yellow No. 5, which must be specifically indicated on the label of any product containing it.
C —Hazards: FD&C Yellow No. 5 (Tartrazine), a coal tar derivative, causes A allergic reactions in people sensitive to aspirin. Citrus Red No. 2 is a known carcinogen but is still used on the skins of oranges. FD&C Green No. 3 is a suspected allergen and produces malignant tumors when injected under the skin of rats. (Subcutaneous injection is no longer considered to be a valid cancer test.) FD&C Red No. 40 has been found to produce tumors in rats and is undergoing further study. FD&C Blue Nos. 1 and 2 produce tumors in test animals.

Artificial coloring also is associated with hyperactivity in children. Dosages only slightly higher than the national average intake of eight of these colors have caused significant increases in hyperactivity.

—Found mainly in: Many foods. Only Yellow No. 5 must be listed specifically on a label.

Aspartame: A sweetener with approximately 160 times the sweetness of sugar.
—Hazards: Persons with phenylketonuria (PKU) cannot process aspartame. Its accumulation in their bodies can cause mental retardation and death. Acts synergistically with monosodium glutamate, a similar compound.

Found mainly in: Beverages, breakfast cereals, chewing gum, gelatins, and puddings.

Caffeine: A stimulant that occurs naturally in coffee, tea, chocolate, kola nuts, etc. and which is added to many other products.
T? —Hazards: Addictive. May be a teratogen. May cause peptic ulcers and heart ailments. Young people may have a much lower level of tolerance than adults do.

—Found mainly in: Carbonated beverages, chocolate products, coffee, and tea.

Calcium disodium EDTA: See KITCHEN: Food, Preservatives/Antioxidants.

Caramel: Used as a coloring and flavoring. Produced by heating sugar.
—Hazards: Caramel produced by an ammonia process can inhibit growth. No data available on cancer-causing effects; testing is currently under way.

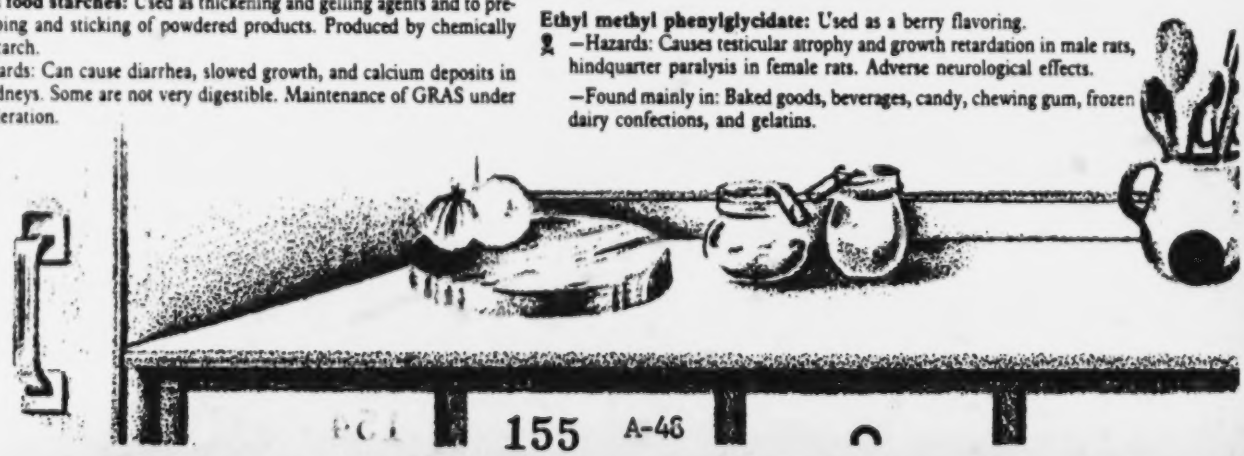
—Found mainly in: Candy, cola, and root beer.

Cinnamyl anthranilate: Used for its fruity taste.
C —Hazards: Produces lung tumors in mice. Has been voluntarily discontinued after a proposed ban by the FDA.

—Found mainly in: Baked goods, beverages, candy, gelatin desserts, and ice cream.

Ethyl methyl phenylglycidate: Used as a berry flavoring.
—Hazards: Causes testicular atrophy and growth retardation in male rats, hindquarter paralysis in female rats. Adverse neurological effects.

—Found mainly in: Baked goods, beverages, candy, chewing gum, frozen dairy confections, and gelatins.



Ionone: An intermediary compound used in the synthesis of vitamin A. Used in fruit and nut flavorings.
Ⓐ —Hazards: Causes allergic reactions in some people.

—Found mainly in: Baked goods, beverages, candy, chewing gum, gelatin, and ice cream.

Licorice: Used as a flavoring.
①?—Hazards: Has been shown to exacerbate hypertension (high blood pressure). Some evidence of increased spontaneous abortion in test animals.

Mace/Nutmeg: Seeds from the myristica tree are used as flavorings. Nutmeg is the seed itself; mace is the shell.
©?—Hazards: Affects neural activity. Can cause intoxication and hallucination, abdominal pain, nausea, and stupor. Affects heart beat, respiration, and vision. Some varieties contain safrole, which causes liver cancer in test animals and has been banned by the FDA.

—Found mainly in: Baked goods, beverages, candy, chewing gum, condiments, ice cream, meats, and pickles.

MSG (monosodium glutamate): Used as a flavor enhancer.
①?—Hazards: Causes brain damage in test animals. Has produced reproductive dysfunctions in test animals. Causes female animals to conceive less frequently and to have smaller litters. There is evidence that it produces learning impairment in rats. It is thought responsible for "Chinese restaurant syndrome", the symptoms of which include chest pain, headache, numbness, and burning sensations.

—Found mainly in: Baked goods, candy, Chinese cuisine, condiments, meat, pickles, and soup.

Quinine: Made from the bark of the cinchona tree, it is used as a bitter flavoring.
① —Hazards: Cinchonism produces nausea, hearing loss, vision impairment, and vomiting. Fetuses of test rabbits have shown hearing damage. Allergic reactions cause skin rashes.

—Found mainly in: Tonic water, bitters, and fruit beverages.

Saccharin: The most commonly used calorie-free sweetener.
© —Hazards: Is a demonstrated animal carcinogen.

—Found mainly in: Dietetic foods.

Sassafras: Used as a flavoring and topical anesthetic.
© —Hazards: Contains safrole, which has caused liver cancer in test animals. Banned by the FDA.

—Found mainly in: Home concoctions. Its commercial use is prohibited.

Shellac: Confectioner's glaze. A food-grade version of the furniture finish.
? —Hazards: Is untested.

—Found mainly in: Baked goods, candy, and some fruits.

Smoke flavor: Condensate from burning hickory or maple wood.
© —Hazards: There are a number of carcinogens present in woodsmoke. Benzo(a)pyrene is removed from the commercial products, but other cancer-causing substances may remain. Probably less dangerous than natural woodsmoking.

—Found mainly in: Baked beans, barbecue sauces, cheese, fish, and meats.

Sodium chloride: Table salt.
—Hazards: Causes hypertension (high blood pressure). Infants may not be able to excrete salt effectively.

—Found mainly in: Table salt and salted foods.

Tannin: Used for its astringent taste.
© —Hazards: Has caused tumors and death in test animals.

—Found mainly in: Baked goods, candy, and ice cream.

Xylitol: A wood sugar that does not increase blood sugar as much as glucose does. Seems to be effective in lessening dental caries.
© —Hazards: A diuretic. Causes tumors and organ damage in test animals. Undergoing further testing, with voluntary suspension of use.

—Found mainly in: Sugarless chewing gum.

Kitchenware

Utensils used in the kitchen are not directly under the FDA's jurisdiction, but the agency has stepped in where there has been suspicion of contamination of food by such products. So far, such regulation has been largely a matter of investigation; only lead glazes on earthenware are watched closely by the FDA.

Pots and Pans

Aluminum: Cast into uncoated pots and pans.
⊙ —Hazards: High concentrations produce memory loss and brain deterioration. Evidence shows an association with Alzheimer's disease (senility). May bind phosphorus and calcium, leading to deficiencies.

Copper: Used to make uncoated pots and pans. Brass also contains copper.
—Hazards: Toxic at high concentrations. Depletes the body of zinc. Persons with Wilson's disease should avoid its use. Acid-containing foods can leach copper from the utensil.

Earthenware: Pottery coated with glazes.
—Hazards: Lead and cadmium may be leached from the glazes by acid-containing foods. Some glazes may crack or craze, releasing material into food. Lead causes brain damage, blindness, and mental retardation. Children absorb four times as much as adults do per unit ingested. Cadmium causes abdominal pain, vomiting, anemia, kidney dysfunction, diarrhea, and pneumonia (if inhaled).

Enamel coatings: The best coatings are made with tin oxide; less expensive products are made with antimony oxide.
⊙ —Hazards: Antimony oxide glazes can chip off and form tartar emetic, which is mildly toxic.

Iron: Contributes essential iron to the diet of most people.
—Hazards: People with hemochromatosis (the inability to process iron) should avoid its use.

Teflon-type coatings: May be any of a number of plastics besides the Du Pont product.
—Hazards: Tetrafluoroethylene is toxic but is only released from cookware at very high temperatures (above 700°F). The coatings may chip off as the pot or pan wears.

Stainless steel: Usually layered onto aluminum or steel.
© —Hazards: Persons with extreme metal sensitivity may need to avoid its ⊙ use because of nickel leaching. In large dosages, nickel causes cancer.

Dinnerware

Cadmium coatings: Used on some metal trays, particularly older ice cube trays.
—Hazards: Acid-containing foods may leach cadmium from coated trays. Cadmium is highly toxic; see KITCHEN: Kitchenware, Earthenware.

Decorated glasses: Many patterned glasses are prepared with decals.
—Hazards: Decals contain strong concentrations of lead and cadmium, which may be released onto the hands or lips. Both are highly toxic; see KITCHEN: Kitchenware, Earthenware.

Pewter: Old pewter may have been made with lead, a practice that's been discontinued.
—Hazards: Lead is very toxic; see KITCHEN: Kitchenware, Earthenware.

Plastic plates: Older plastic plates were often made with melamine and formaldehyde.
—Hazards: Formaldehyde can leach from such products. It is toxic and carcinogenic; see UTILITY ROOM: Disinfectants/Air Fresheners.

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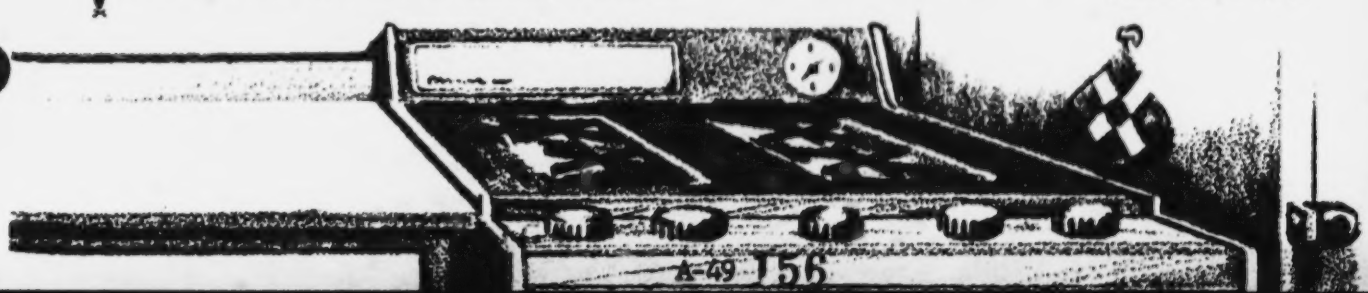


What Lurks in Your Utility Room?

(continued from preceding page)

Under the Federal Hazardous Substances Act, the Consumer Product Safety Commission (CPSC) is required to regulate substances or products that are toxic, are flammable, are corrosive, are irritating, generate pressure, are radioactive, or cause strong reactions in people prone to allergies. It also regulates toys that present electrical, mechanical, or thermal hazards to children. The CPSC's mandate also includes the authority to require labeling on products that contain such hazardous substances or which present hazards by their design.

To date, the CPSC's main concern has been with acute toxicity or other immediate hazards, so the study of chronic hazards of vapors in the household has been largely left to the Environmental Protection Agency. In the late 70's and early 80's the EPA began to study a number of different indoor pollution problems, the most prominent of them being emissions from gas appliances and heaters, kerosene heaters, and woodburning stoves. In the last two years, however, the EPA has largely abandoned work in these areas.

To make matters worse, a bill (H.R. 2668) was introduced and passed in the House in the fall of 1983 that would strip the CPSC's ability to act. The bill proposes that no CPSC rule be enforceable until it has passed the House and Senate and has been signed by the President. The Senate's reaction to this legislation bears watching.

It's not surprising, then, that the ability of regulation to protect us from the more insidious hazards of household products is quite limited. Once we tread beyond the immediate danger posed by the following substances, we've moved onto soft ground. It's our position, once again, that in the absence of knowledge, we should exercise caution.

If you'd like more information on the safety of the cleansers, detergents, and other chemicals used to care for your home, we'd suggest that you look into *The Household Pollutants Guide* by the Center for Science in the Public Interest (Environmental Action Foundation, 1346 Connecticut Ave. N.W., Washington, DC 20036, $4.95) and *The Product Safety Book* by Stephen Brobeck and Anne C. Averyt (The Consumer Federation of America, E.P. Dutton, Inc., 1983, $9.95). Also, for suggestions on how to replace commercial cleansers (among other things), see *Natural Formula Book for Home and Yard* edited by Dan Wallace (Rodale Press, Inc., 1982, $17.95).

Cleaners, Drain

Hydrochloric or sulfuric acid: Used to promote chemical action on organic matter.

—Hazards: Extremely corrosive. Concentrated solutions cause severe burns and eye damage. Weaker concentrations cause skin irritation and photosensitization. Inflammation and ulceration of the respiratory tract can be caused by inhaling concentrated vapors. Ingestion causes corrosion of gastrointestinal tract, nausea, vomiting, diarrhea, circulatory collapse, and death.

Lye (potassium or sodium hydroxide): Used for its chemical action on organic matter. The majority of drain cleaners contain it.

—Hazards: Extremely corrosive. Usually fatal if swallowed.

Cleaners, Household

Aerosols: Used to disperse active ingredients in a variety of household products.

—Hazards: Beyond the hazards of the active ingredients in aerosol sprays and the possibility of explosion, the propellants themselves present a danger. Today, most propellants are either nitrous oxide (which is associated with brain damage and may cause cancer) or propane (which is highly flammable). Aerosol sprays produce vapors that can easily be inhaled deep into the lungs, greatly increasing the hazards of any toxicants contained in the product or which are carried with it.

Sodium dodecylbenzenesulfonate: Used to dissolve grease and oil.

—Hazards: Causes skin irritation and, if swallowed, vomiting.

Sodium hypochlorite: Used to bleach and disinfect.

—Hazards: Ingestion causes corrosion of mucous membranes, perforation of esophagus and gastric areas, and laryngeal edema. Inhalation causes bronchial irritation and pulmonary edema. Contact causes skin irritation. Mixing bleach with ammonia produces chloramine gas, which is very toxic; mixing bleach with vinegar or some acids produces chlorine gas, which is also extremely toxic.

Sodium tripolyphosphate: Used as a cleaning agent. Common in coffeepot cleaners.

—Hazards: Is moderately irritating to the skin and mucous membranes. Ingestion causes violent vomiting.

Trisodium phosphate (TSP): Used to soften water and as a cleaning agent.

—Hazards: Irritating to skin, eyes, mucous membranes. Undiluted, it is very alkaline.

Cleaners, Metal

Phosphoric acid: Dissolves oxidized metal. Also used in denture cleaners.

—Hazards: Irritating to the skin and mucous membranes.

Cleaners, Oven

Aerosols: See UTILITY ROOM: Cleaners, Household.

Lye (potassium or sodium hydroxide): Used for its chemical action on organic matter.

—Hazards: See UTILITY ROOM: Cleaners, Drain.

Ammonia: Used for its chemical action on organic matter.

—Hazards: Inhalation of concentrated vapors causes edema of respiratory tract, spasm of the glottis, and asphyxia. Mixing with chlorine bleach produces toxic chloramine gas.

Cleaners, Toilet Bowl

Hydrochloric acid: Used for its chemical action on organic matter.

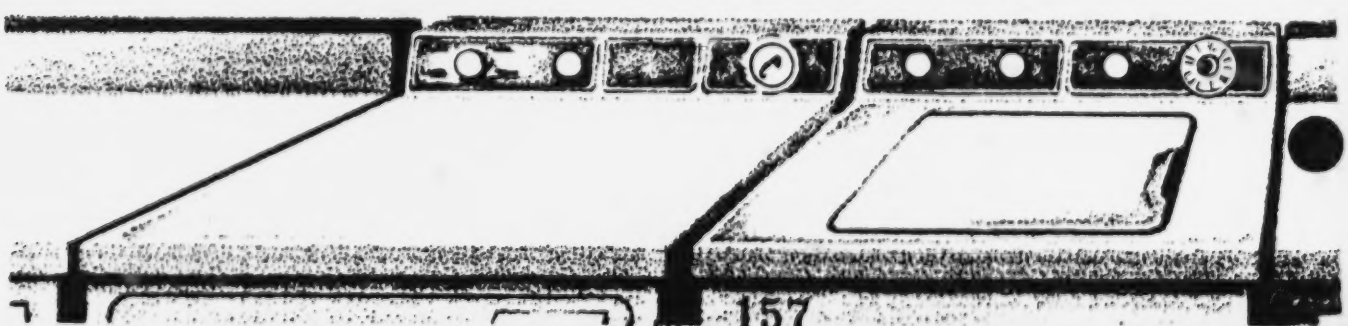
—Hazards: See UTILITY ROOM: Cleaners, Drain.

Cleaners, Window

Aerosols: See UTILITY ROOM: Cleaners, Household.

Ammonia: Usually mixed with water and detergent.

—Hazards: See UTILITY ROOM: Cleaners, Oven.



Dishwasher Soap

Sodium silicate (water glass): Used to protect the machine's parts.
—Hazards: Causes irritation of the skin and mucous membranes. Ingestion causes vomiting and diarrhea.

Sodium tripolyphosphate: Used as a cleaning agent.
—Hazards: See UTILITY ROOM: Cleaners, Household.

Disinfectants/Air Fresheners

Aerosols: See UTILITY ROOM: Cleaners, Household.

Carbolic acid (phenol): Used as a disinfectant.
—Hazards: Ingestion can cause nausea, vomiting, circulatory collapse, paralysis, convulsions, coma, respiratory failure, and cardiac arrest. Death has resulted from ingesting as little as 1 gram of concentrated solution. Passes through the skin. Chronic poisoning can cause kidney and liver failure.

Cresol: Used as a disinfectant.
—Hazards: Can be absorbed through the lungs or mucous membranes. Causes liver, kidney, lung, pancreas, and/or spleen damage. Ingestion causes circulatory collapse and death.

Formaldehyde: Common in air fresheners.
—Hazards: Causes irritation of the eyes, nose, throat, and skin. As much as 1% to 4% of the population becomes sensitized to it and reacts at even small concentrations. Causes nausea, headaches, nosebleeds, dizziness, memory loss, and shortness of breath. Inhalation has caused cancer in test animals. For information on a reasonably priced formaldehyde indoor pollution test, write to the National Indoor Environmental Institute, 5200 Butler Pike, Plymouth Meeting, PA 19462.

Furniture Polish

Naphtha: Used as a carrier for waxes.
—Hazards: Inhalation of vapors can cause drowsiness, headache, coma, and cardiac arrest.

Nitrobenzene: A polishing ingredient.
—Hazards: Vapors are hazardous and can be rapidly absorbed through the skin. Causes nausea, vomiting, methemoglobinemia (impairment of oxygen distribution in the blood) with cyanosis (characteristic bluish coloring of the skin).

Oil of cedarwood: A polishing ingredient.
—Hazards: A central nervous system depressant. May induce spontaneous abortion.

Laundry Products

Aerosols: Used to disperse active ingredients in spot removers and spray starches.
—Hazards: See UTILITY ROOM: Cleaners, Household.

Linear alkylate sulfonate: Used as a wetting agent in detergents.
—Hazards: Has caused liver ailments in test animals at comparatively low dosages. Absorbed through the skin.

Perchloroethylene and tetrachloroethylene: The active ingredients in do-it-yourself dry-cleaning formulations.
—Hazards: Inhalation of vapors can cause dizziness, sleepiness, nausea, tremors, and liver damage. Depresses the central nervous system.

Phosphate substitutes: Used to replace phosphates in detergents that cause algal growth problems in drainage waters.
—Hazards: Nonphosphate detergents are far more alkaline than phosphate detergents, which already have very high pH.

Sodium and calcium hypochlorite (bleach): Used to whiten fabrics.
—Hazards: See UTILITY ROOM: Cleaners, Household.

Sodium tripolyphosphate: Used as cleansing agent in detergents.
—Hazards: See UTILITY ROOM: Cleaners, Household.

Pesticides

There is danger to human health from nearly all commercially used pesticides. The ones listed below are particularly dangerous.

Arsenates: Active ingredients in insecticides, weed killers, rodenticides, and fungicides.
—Hazards: Extremely poisonous. Cause nausea, vomiting, diarrhea, shock, and death. Chronic exposure causes degeneration of liver and kidneys.

Diazinon (dimpylate): An active ingredient in insecticides.
—Hazards: Impairs central nervous system function. Extremely toxic.

Dichlorvos (DDVP): An active ingredient in insecticides.
—Hazards: Impairs central nervous system function. Extremely toxic.

Lindane: An active ingredient in insecticides. Also found in some prescription lice shampoos, flea powders, and dog shampoos.
—Hazards: Acute symptoms after inhalation, ingestion, or absorption through skin include nausea, vomiting, diarrhea, tremors, convulsions, cyanosis, and circulatory collapse. Chronic effects include liver damage, stillbirths, and fetal abnormalities. Has caused cancer in test animals.

Refrigerants

Chlorofluoromethanes: Used to chill refrigerators, freezers, and air conditioners.
—Hazards: May cause frostbite if bare skin is exposed to it. If expelled from containment and exposed to heat, it can form extremely toxic phosgene gas (nerve gas, as this substance was called in World War I). Never operate the engine when venting a car's air-conditioning system.

Shoe Care Products

Methylene chloride: Used in cleaning and polishing solutions. A major ingredient in paint strippers.
—Hazards: Inhalation of vapors causes carbon monoxide accumulation in blood, which can result in coma and death. Hazard is increased for those with cardiac or pulmonary conditions.

Nitrobenzene: Used in cleaners.
—Hazards: See UTILITY ROOM: Furniture Polish.

o-dichlorobenzene: Used in dyes.
—Hazards: Depresses the central nervous system. Causes liver and kidney damage in test animals.

Perchloroethylene: Used in cleaners.
—Hazards: Has narcotic effects in high concentrations. Its defatting action can cause skin irritation and dermatitis. See UTILITY ROOM: Laundry Products.

Propylene dichloride: Used in dyes.
—Hazards: Irritating to the eyes and mucous membranes. Has caused liver and kidney damage in test animals. Narcotic in high concentrations.

1,1,1-trichloroethane: Used in polishes and dyes.
—Hazards: Irritating to the eyes and mucous membranes. Narcotic in high concentrations.

Trichloroethylene: Used in polishes and cleaners.
—Hazards: Moderate concentrations produce intoxication; higher concentrations have narcotic effect. Has produced liver cancer in test animals.

Xylene: Used in cleaners.
—Hazards: Narcotic in high concentrations. Chronic toxicity not determined.

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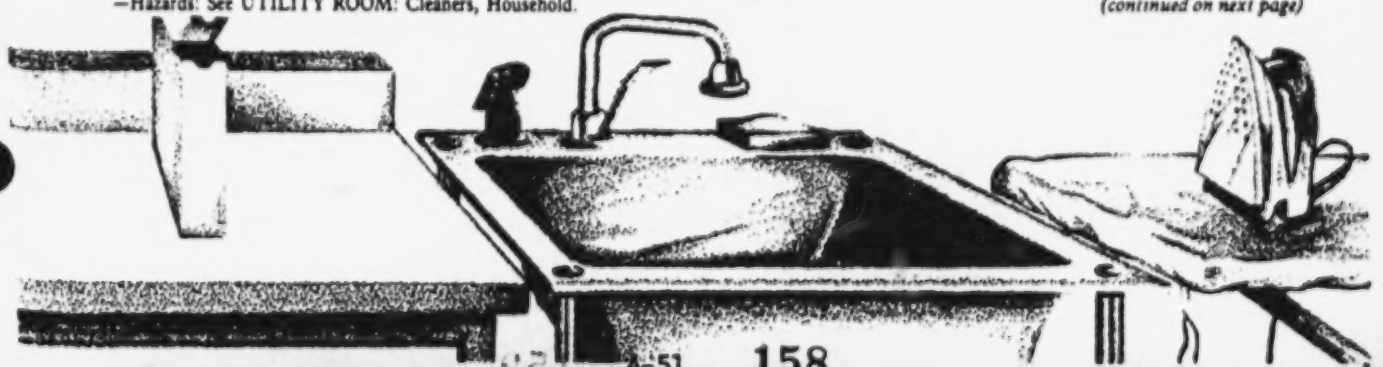


The Bathroom: The Not-So-Pretty Risks of Cosmetics

The following section on cosmetics was adapted from an article by Ruth Decker that appeared in the Summer 1983 issue of Medical Self-Care.

Ruth Decker and MOTHER's Staff

Cosmetics

The cosmetics industry, whose sales totaled $10.4 billion in 1980, produces more than 25,000 products containing 8,000 ingredients, and yet it's virtually unregulated. According to the Food, Drug, and Cosmetic Act of 1938, the FDA is responsible for insuring that cosmetics are safe. Unfortunately, the agency has little real authority over the cosmetic manufacturers. The FDA can't require them to register their products or even to inform the agency of their ingredients. If the FDA receives reports that a cosmetic is unsafe, it can't order the product removed from the market pending a review. To have any cosmetic taken off the market, the FDA must obtain a court order through a long and difficult procedure.

The burden of proof is on the regulator: Cosmetics are definitely innocent until proven guilty. But with a nonadministrative staff of only 28 people (20 testers at FDA headquarters in Washington and eight field investigators) and a budget that in 1982 was only $2.3 million for the Cosmetic Technology Division, the agency is unable to pursue many cases. And even if the FDA had sufficient funds, it couldn't ban hair dyes that are known to contain carcinogens. Congress specifically exempted coal-tar dyes from the section of the Food, Drug, and Cosmetic Act that empowers the FDA to prohibit the use of "adulterated" substances.

Not surprisingly, self-regulation doesn't seem to be working all that well, either. In 1978 the *Cosmetic Ingredients Dictionary*, published by the Cosmetic Toiletry Fragrance Association, neglected to mention that 100 chemicals listed as cosmetic ingredients were also classed as suspected carcinogens by the National Institute for Occupational Safety and Health (NIOSH). The *Dictionary* also listed 24 other ingredients that NIOSH suspected of causing birth defects and 20 suspected of causing adverse nervous system effects—such as headaches, drowsiness, and convulsions—without making any mention of their possible hazards.

To its credit, the FDA has established rules for cosmetic labeling, with which the majority of manufacturers have complied. But the agency has, at times, been less than enthusiastic about initiating the regulatory actions that lie within its powers. In 1978 Gregory Ahart of the General Accounting Office, appearing before a Congressional subcommittee, told its members, "The Consumer Product Safety Commission has established regulations requiring that specific warning statements be placed on the labels of household products containing certain toxic ingredients, but the FDA has not established similar regulations governing the use of the same ingredients in cosmetics."

If you'd like to find out more about the compounds found in cosmetics, see *A Consumer's Dictionary of Cosmetic Ingredients* by Ruth Winter (Crown Publishers, Inc., 1976, $4.95).

Acetone: Used in nail polishes and polish removers.
—Hazards: Inhalation may cause headache, fatigue, excitement, bronchial irritation, and (in large amounts) narcosis.

Aluminum chlorohydrate: Used in deodorants/antiperspirants.
—Hazards: May be irritating to the skin.

Artificial color: FD&C Blue No. 1 is used in facial cosmetics, creams, perfumes and colognes, soaps, and toothpaste.
?—Hazards: A suspected carcinogen.

BHT: Used in lipsticks, eye makeup, creams, shaving creams, and skin care products.
—Hazards: See KITCHEN: Food, Preservatives/Antioxidants.

Boric acid: Used in baby powders, bath powders, creams, mouthwashes, soaps, and skin treatments.
—Hazards: Extremely toxic and can be absorbed through abraded skin. Less than 5 grams of boric acid can cause death in an infant.

Carbolic acid (phenol): Used in shaving creams and skin care products.
—Hazards: See UTILITY ROOM: Disinfectants/Air Fresheners. Banned by the European Economic Community for use in cosmetics.

Coal tar: Used in dandruff shampoos.
—Hazards: A demonstrated human carcinogen.

Dibutyl phthalate: Used in nail polishes and polish removers. Also used in insect repellents.
?—Hazards: A suspected teratogen.

Diethanolamine (DEA): Used in hair conditioners.
—Hazards: May combine with nitrites or nitrates to form N-nitrosodiethanolamine (NDELA), a nitrosamine. Nitrosamines are potent carcinogens. Produced with ethylene oxide, a suspected carcinogen.

EDTA: Used in facial cosmetics, creams and lotions, and soaps.
—Hazards: See Calcium disodium EDTA in KITCHEN: Food, Preservatives/Antioxidants.

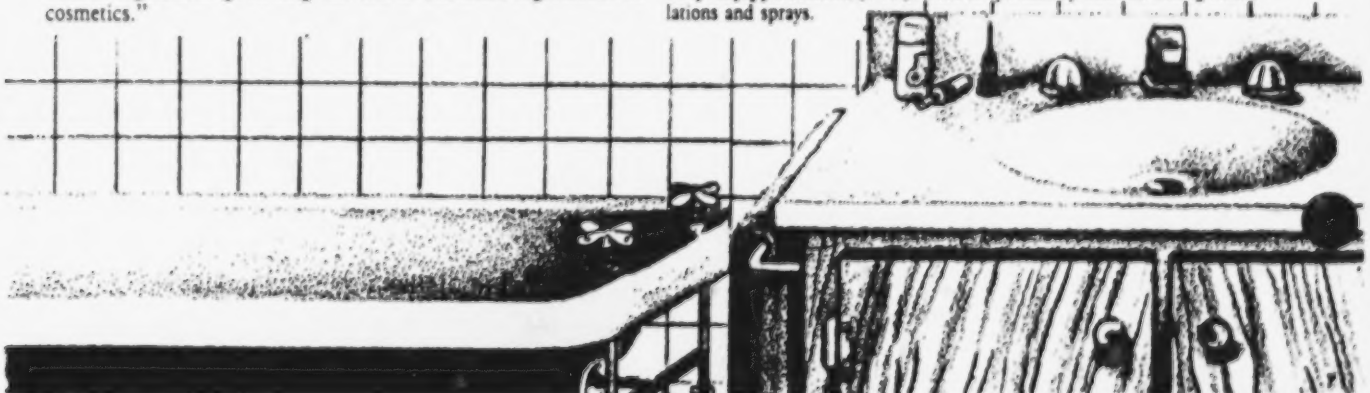
Formaldehyde: Used in eye makeup, nail polish (up to 5%), deodorants/antiperspirants, shampoos, and some mouthwashes.
—Hazards: See UTILITY ROOM: Disinfectants/Air Fresheners.

o-Hydroxyanisole (Guaiacol): Used in facial cosmetics, lipstick, and eye makeup. Used as a replacement for phenol because it's less toxic.
—Hazards: Ingestion causes gastrointestinal irritation and heart failure. Absorbed through the skin. Has been banned by the European Economic Community.

Iron oxides: Used as colorants in eye makeup.
?—Hazards: Suspected carcinogens.

Lead acetate: Used in hair dyes.
—Hazards: Causes cancer in animals. Absorbed through the skin.

Polyvinylpyrrolidone (PVP): Used in eye makeup and hair-setting formulations and sprays.



—Hazards: Ingestion can damage liver and kidneys. Inhalation may damage lungs. Has caused tumors in test animals. A suspected teratogen.

Saccharin: Used in toothpaste.
—Hazards: See KITCHEN: Food, Flavorings/Colorings.

Selenium sulfide: Used in dandruff shampoos.
—Hazards: Occupational exposure has caused gastrointestinal disturbance, skin rash, and liver damage. A recognized carcinogen.

Sodium Carrageenan: Used in toothpaste. A non-food-grade version of carrageenan.
—Hazards: See Carrageenan in KITCHEN: Food, Emulsifiers/Stabilizers.

Toluene: Used in nail polishes and polish removers.
—Hazards: Can cause mild anemia. Affects the central nervous system. A suspected carcinogen.

Triethanolamine (TEA): Used in bubble bath, creams and lotions, facial cosmetics, hair-treatment products, perfumes and colognes, shampoos, shaving creams, and sun preparations.
—Hazards: See Diethanolamine in BATHROOM: Cosmetics.

Zirconium: An alternative to aluminum compounds used in deodorants/antiperspirants.
—Hazards: Inhalation can cause cancer. Banned from aerosol products. Sodium zirconium lactate may cause chronically inflamed skin.

Medications

As mentioned in the introduction to this mini-manual, we won't examine the hazards of prescription pharmaceuticals or their interactions with other substances. Rather, we'll review basic over-the-counter medicines that may contain substances that can be hazardous.

The FDA is responsible for regulating all medicines and regularly receives recommendations from the American Medical Association. All ingredients in over-the-counter medications must be clearly labeled, and in most cases the quantities will be specified. An excellent layperson's reference to these medicines is *Widger's Guide to Over-the-Counter Drugs* by H. Neil Widger, M.D. (J.P. Tarcher, Inc., 1979, $10). For guidelines to the use of pharmaceuticals during pregnancy, see *The Handbook for Prescribing Medications During Pregnancy* by Richard L. Berkowitz, et al (Little, Brown and Co., 1981, $12.95).

Acetaminophen: A pain reliever.
—Hazards: Overdose causes liver damage.

Aloe vera: Used as skin treatment for burns, rashes, and so on. Taken internally for upset stomach.
? —Hazards: Can cause diarrhea in nursing infants whose mothers ingest it.

Antacids: Usually consist of aluminum or magnesium hydroxide, or sodium or calcium bicarbonate.
—Hazards: Aluminum compounds cause constipation, while magnesium causes diarrhea. Aluminum has also been associated with Alzheimer's disease (senility). Sodium bicarbonate is not recommended for people on salt-restricted diets, because it increases blood pressure. Calcium bicarbonate can produce kidney stones and kidney damage; it also tends to increase acid production in the stomach.

Antihistamines: The effective ingredients in allergy medications. Also found in cold remedies, menstrual-cramp medications, and sleeping pills, where they haven't been proven to be effective.
—Hazards: Cause drowsiness, which is increased with consumption of alcohol. One antihistamine, aminoxide hydrobromide (related to scopolamine), can increase severity of glaucoma, enlarge the prostate, and make urination difficult. Reduces lactation in nursing mothers.

Artificial colors: FD&C Yellow No. 5 is used to coat and color medications.
—Hazards: Many medicines with Yellow No. 5 are allergy preparations. People prone to allergies are often affected by this dye. See KITCHEN: Food, Flavorings/Colorings.

Aspirin: An effective analgesic (pain reliever).
—Hazards: Can cause upset stomach and bleeding (particularly if mixed with alcohol). Is associated with Reye's syndrome in children 5 to 16 who have a viral illness. The powdered forms often have a great deal of sodium, which increases blood pressure. Buffered varieties have antacids (see BATHROOM: Medications). Some contain caffeine (see KITCHEN: Food, Flavorings/Colorings). Some have phenacetin, which causes kidney disease and episodic anemia.

Benzoyl Peroxide: The active ingredient in some acne medications.
—Hazards: Has caused skin cancer in mice.

Cough suppressants: Used for symptomatic relief from colds.
—Hazards: Dextromethorphan causes drowsiness. Codeine (not an over-the-counter drug in many states) causes drowsiness and can be addictive if taken in large dosages over long periods.

Decongestants: Used for symptomatic relief from colds and allergies. Better products contain pseudoephedrine, which is taken orally or by inhalation. Sometimes mixed with antihistamines, which aren't very effective in combating cold symptoms.
—Hazards: Increase blood pressure. Cause nervousness, insomnia, palpitations, and a rise in blood sugar. Other ingredients, such as belladonna, may increase severity of glaucoma, enlarge the prostate, and produce difficulty in urination. Phenylpropanolamine and phenylephrine greatly increase blood pressure.

Diarrhea medications: The ones considered most effective contain opiates, which are not available over the counter in most states.
—Hazards: Opiates cause drowsiness. They are addictive if consumed in large dosages over extended periods.

Diet pills: None have been shown to be effective at producing weight loss.
—Hazards: Some contain the decongestant phenylpropanolamine, which greatly increases blood pressure. Most contain caffeine (see KITCHEN: Food, Flavorings/Colorings).

Ethyl alcohol: A common ingredient in cold remedies, cough suppressants, and mouthwashes.
—Hazards: Addictive. Causes nausea, vomiting, impaired coordination, coma, and death. Chronic effects include liver damage. Fetal alcohol syndrome includes low birth weight, physical defects, and retardation. Alcohol crosses into the milk during lactation. Increases stomach upset and bleeding when combined with aspirin.

Expectorants: Used to loosen phlegm to relieve bronchial congestion. There is some controversy over their effectiveness.
? —Hazards: Often mixed with decongestants, antihistamines, and/or aspirin (see BATHROOM: Medications).

Hemorrhoidal preparations: Some contain antihistamines.
—Hazards: See BATHROOM: Medications, Antihistamines.

Laxatives: May consist of softeners, bulking agents, cathartics, and/or stimulants.
—Hazards: Sodium cathartics cause loss of body fluids and kidney problems. Stimulants can cause stomach cramps and dependence. Castor oil causes loss of body fluids and reduction of sodium and potassium electrolytes. Mineral oil prevents absorption of vitamins A, D, E, and K and is a suspected carcinogen.

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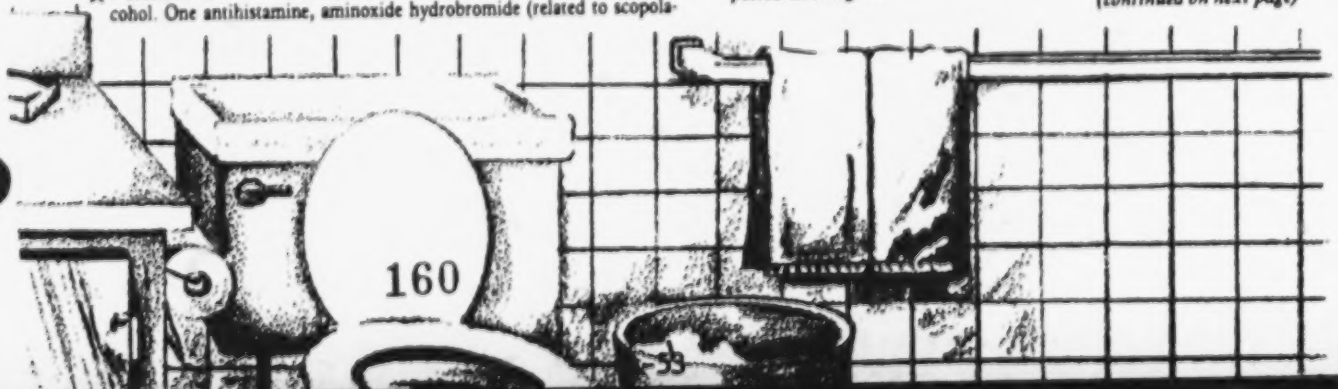

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Medications to avoid during pregnancy: Many compounds can cross the placenta into the growing fetus.

?☠ —Hazards: Caffeine (see KITCHEN: Food, Flavorings/Colorings). Ethyl alcohol (see BATHROOM: Medications). Salicylate is an aspirin compound that can prolong pregnancy and increase postpartum bleeding. Large dosages of vitamin D can produce excess calcium in the infant. Large dosages of vitamin B_6 can produce dependency in the infant.

Menstrual preparations: Usually consist of painkillers, diuretics, caffeine, antihistamines, and/or decongestants. The last four are probably ineffective.

☠ —Hazards: Acetaminophen (see BATHROOM: Medications). Antihistamines (see BATHROOM: Medications). Aspirin (see BATHROOM: Medications). Decongestants (see BATHROOM: Medications). Diuretics can cause excessive body-fluid loss.

Motion-sickness drugs: The way these drugs work is not well understood. Dimenhydrinate is the most common ingredient.

☠ —Hazards: Causes drowsiness. Can increase severity of glaucoma, enlarge the prostate, and cause urine retention.

Skin medications: Usually consist of ointments or sprays that are antiseptic and/or antibiotic.

Ⓐ ☠ —Hazards: Boric acid (see BATHROOM: Cosmetics). Cresol (see UTILITY ROOM: Disinfectants/Air Fresheners). Neomycin can cause skin rashes; it sensitizes allergic people to a whole range of antibiotics.

Sleeping pills: Many of these are simply antihistamines.

☠ —Hazards: Antihistamines (see BATHROOM: Medications). Most sleeping pills interrupt normal sleep cycles and rapid eye movement (REM) sleep; the rest produced is not as effective as in normal sleep.

Throat lozenges: Usually have an anesthetic and/or antiseptic.

☠ —Hazards: Some contain carbolic acid, or phenol (see UTILITY ROOM: Disinfectants/Air Fresheners).

Is This Really the *Living* Room?

Our section on the living room is really one that extends to all the materials from which your home and its furnishings are made. These substances will be of prime concern to people who are living in new, energy-efficient homes with low air-exchange rates. But even in the typically well-ventilated older home, the levels of some gases that may be inhaled can reach the point at which sensitive individuals are affected.

The Federal Trade Commission shares responsibility with the CPSC for regulating building materials, though its authority is mostly in the regulation of combustibility and appropriate labeling. During the recent uproar concerning the toxic gas emitted by urea-formaldehyde insulation, it was the CPSC that banned the use of that product. Subsequently, a federal court overturned the ruling, and urea-formaldehyde is once again permitted for residential and commercial use.

Few products that emit toxic compounds are labeled as such, so in the following notations we'll try our best to list all of the sources of the substances mentioned.

Asbestos: Asbestos was outlawed as a building material in the 1970's, and hair dryers with asbestos thermal insulation were recalled by the CPSC. Nevertheless, there may be existing sources of asbestos in your home.

© —Hazards: Causes asbestosis, lung cancer, and mesothelioma (a rare type of lung cancer) if inhaled. Ingestion can produce a variety of other cancers. Asbestos crosses the placenta into the fetus, affecting the unborn. It acts synergistically with other toxic substances. It remains suspended in the air for long periods. If asbestos products are damaged, have qualified, properly equipped personnel remove them from your home.

—Found in: Thermal and electrical insulation; fireproofing materials, such as woodstove insulation boards and ironing board covers; plaster, drywall and drywall compound, ceiling tiles, and cement; exterior shingles; and roofing.

Formaldehyde: One of the most ubiquitous hazardous substances in the household.

—Hazards: See UTILITY ROOM: Disinfectants/Air Fresheners.

—Found in: Urea-formaldehyde insulation; interior plywood, particleboard, and paneling; paper-bag binders; synthetic countertop materials; wallpaper glue; resins and oil-based paints; cosmetics; air fresheners; wood glue; plaster of paris; plastics; cigarette smoke; facial tissues and paper napkins; and synthetic fibers, including clothing, upholstery, drapes, and carpeting.

Radon gas and its progeny: Radon is itself a daughter product of radium compounds present in the soil, groundwater, natural gas, and building materials, and it further decays into other radioactive gases.

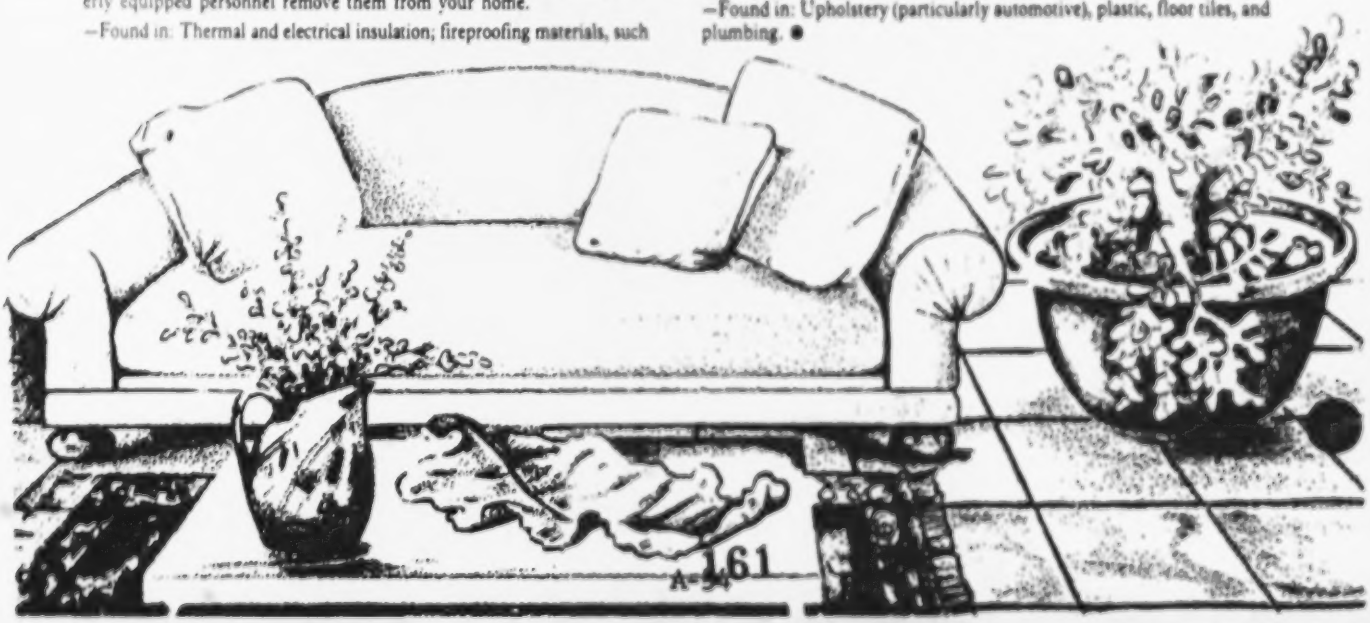
© Hazards: Causes lung cancer in humans. Acts synergistically with smoke. Worst-case indoor concentrations have been one-half to one-third of those found in uranium mines. Cancer risk is still significant. For information on a reasonably priced test, write to the National Indoor Environmental Institute, 9200 Butler Pike, Plymouth Meeting, PA 19462.

—Found in: Soil beneath houses; water; natural gas burned in appliances; and building materials, including concrete, rock, tile, brick, and other mineral-based materials.

Vinyl chloride: A by-product and leachate of polyvinylchloride (PVC) plastic. The use of vinyl chloride itself was regulated in 1976.

© ☠ —Hazards: Irritates mucous membranes. Causes liver dysfunction. Related to hepatitis, chronic bronchitis, Raynaud's syndrome, and loss of vision. Has caused cancer in test animals.

—Found in: Upholstery (particularly automotive), plastic, floor tiles, and plumbing. ●



Baking Soda: A Home's Best Friend

Barbara Overton Christie

My dictionary defines baking soda as "a water-soluble powder, $NaHCO_3$" . . . but I call it a miracle worker. Let me take you through a hypothetical day at the Christie household, just to show you how versatile this inexpensive, safe, eminently *useful* product is.

In the morning, I get up and—instead of reaching for a tube of synthetically flavored gel—take a small box of sodium bicarbonate from the medicine chest, sprinkle some of the powder on my toothbrush, and cleanse my teeth. Baking soda's no more abrasive than toothpaste, so I use it daily.

For breakfast, I offer my family hot-from-the-oven soda biscuits, fare that's far more delicious and much less expensive than canned pop-out biscuits. Afterwards, while washing the dishes, I sponge a little baking soda into the empty coffee cups to remove any stains. And I might put a spoonful of bicarb into our glass percolator, fill the container with boiling water, and let it soak for a few minutes to get rid of stale-tasting residues. When the dishes are done, I sprinkle a little soda on the countertops and in the sink, scrubbing lightly with a sponge and then rinsing. Surfaces (even scuff-prone fiberglass tubs) come clean without a scratch.

Now I'm ready to do some housework, so I mix up a batch of all-purpose cleaner by combining 1/2 cup of household ammonia, 1/2 cup of white vinegar, 1/2 gallon of water, and 1/4 cup of baking soda. A stiff old nailbrush dipped in the solution makes fast work of rubbing out food spots on the dining room carpet . . . and a sponge saturated with the liquid gets fingerprints and smudges off painted walls and woodwork.

While I'm washing down the shower tiles with the solution, I remember this is the day to clean all the drains in the house . . . so I pour 1/2 cup of soda followed by 1/2 cup of vinegar into each one (I sometimes also put a palmful of salt into the kitchen drain, to cut through grease). Half an hour or so later, I flush plain water down the drains, or if a drain is particularly sluggish, I use boiling water. By doing this once a week, I keep our pipes odorless and running free. And if you have a septic tank, flushing a cup of soda down the toilet once a week will help neutralize pH and often encourage the growth of waste-digesting bacteria.

Next, I go downstairs to do laundry. After pre-treating shirt collars and greasy spots with a spritz of my all-pupose soda cleaner (I keep some handy in a spray bottle), I throw in the clothes, add a little less detergent than is recommended on the box, and then make up the difference with some dry baking soda that I store in a jar by the washer. The laundry not only comes out cleaner but also softer.

That afternoon, my son comes into the house and says he has to remove some acid buildup on the terminals of his car battery. A quarter cup of baking soda mixed with a little water, applied with a rag, and left to stand for a few minutes allows him to simply wipe the encrustation away . . . no wire brush needed!

Later, our daughter arrives home from the beach, her face reddened by the sun . . . so I advise her to wash with a soothing solution of (you guessed it) baking soda and water. And when my husband comes in with a bee sting he got while working around the yard, I dab a thick paste of soda and water on the spot to relieve the pain. "That reminds me," he remarks, "the grapes need spraying tomorrow." Every week or so when our grapes are ripening, he mixes 4 teaspoons of baking soda in a gallon of water and sprays the fruit to alkalinize the skins and keep fungus from developing.

At supper that night, while I'm cooking pork chops, some grease spatters on the burner and catches fire. I grab a handful of soda from the jar by the range and throw it on the flames to extinguish them. (When heated, soda releases carbon dioxide and prevents further combustion. Never throw water on a kitchen stove fire!) While washing the dinner dishes, I find that some mashed potatoes scorched and stuck to the bottom of the pot while I was tending to the fire . . . so I cover the gunk with a generous coat of baking soda barely wet with water and leave the pot in the sink overnight. In the morning, the scorch will be loosened for easier washing.

At bedtime, I'm feeling a bit queasy from the pork chops, but 1/2 teaspoon of trusty bicarb in a glass of water brings relief. (I know, though, that folks over 60 and people with high blood pressure should be particularly careful not to make this a habit, because of soda's high sodium content.) Then I draw a tub of hot water, dissolve 1/2 cup of soda in it, and—ahhhh—soak in soft, refreshing bath water.

END OF COMMERCIAL

I know all this sounds like a TV ad, but the fact is that baking soda is one product that really is economical, environmentally safe, easy to use, and wonderfully versatile. I don't own stock in the baking-soda industry . . . I just happen to believe that plain old $NaHCO_3$ far outshines the so-called miracle cleaners and other products that it can so handily replace. And I say this simply because soda really *works*, not because I have any particular ax to grind.

Why, I don't even own an ax. But if I did, I'd polish it with soda. ●

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REGIONAL POISON CENTER
UNIVERSITY OF CALIFORNIA DAVIS MEDICAL CENTER, SACRAMENTO
(916) 453-3692
(800) 852-7221 (toll free)

AMBULANCE _____

DOCTOR _____

EMERGENCY ROOM _____

LIFESAVING FIRST AID FOR POISONING

TYPE OF POISONING	WHAT TO DO
Swallowed poisons	If the person is awake and able to swallow, give milk or water only. Then call the poison center or doctor. *Caution:* Antidote labels on products and antidote charts may be out of date and incorrect. *DO NOT* give salt, vinegar or citrus fruit juices.
Poisons on the skin	Remove any affected clothing. Flood involved parts with water, wash with soap and water, and rinse. Then call the poison center or doctor.
Poisons in the eye	Flood the eye with lukewarm (never hot) water, poured from a pitcher held 3-4 inches from the eye for 15 minutes. Then call the poison center or doctor.
Inhaled poisons	Immediately, carry or drag the person to fresh air and give mouth-to-mouth resuscitation if necessary. Ventilate the area. Then call the poison center or doctor.

Always keep on hand syrup of ipecac which induces vomiting, and epsom salts which acts as a laxative. Do not use either one unless instructed to do so by the poison center or your doctor, and *follow their directions for use.*

SOME COMMON SUBSTANCES & POSSIBLE SYMPTOMS OF OVERDOSE

The following is a list of some of the potentially toxic substances in the environment. Always call for assistance immediately after a poison exposure. NEVER wait until symptoms appear.

MEDICINES

Amphetamines—hyperactivity, agitation, convulsions
Antibiotics—allergic reaction, such as swelling, skin eruptions, breathing difficulty, shock
Anticonvulsants—coma
Antidepressants—coma, convulsions, hallucinations, heart irregularities
Antidiarrheals (prescription)—coma
Antihistamines—hallucinations, agitation, convulsions, coma, fever, depression
Aspirin—fast breathing, ringing in ears, shock, sweating, fever, convulsions
Camphor—convulsions, excitement, coma, feeling of warmth
Cold preparations—hyperactivity, convulsions, coma
Iron, vitamins with iron—bloody vomiting and diarrhea, shock, coma
Oil of wintergreen—fast breathing, ringing in ears, shock, sweating, fever convulsions
Sleeping pills—coma, convulsions, respiratory depression
Tranquilizers—coma, convulsions, respiratory depression

CLEANING PRODUCTS

Ammonia, bleach, dishwasher soap, disinfectants, drain cleaners, toilet bowl cleaners—irritation or chemical burns in mouth and esophagus
Furniture polish, bleach mixed with other cleansers—burning irritation, coughing
Laundry detergents, soaps—vomiting and/or diarrhea

GARAGE & GARDEN PRODUCTS

Acids, adhesives—chemical burns
Antifreeze—coma, blindness, convulsions, drunkenness
Fertilizers—vomiting and/or diarrhea
Gasoline, kerosene, turpentine, paint thinners, solvents, thinners, degreasers, charcoal lighter fluid—coughing, coma, burning irritation
Insecticides—headache, increased body secretions, vomiting, diarrhea, convulsions
Strychnine—convulsions

PERSONAL PRODUCTS

Nail polish remover—irritation and dryness inside mouth and esophagus
Perfume, after shaves, mouthwashes, rubbing alcohol—incoordination, depression, coma
Shampoo, soap, lotions—vomiting and/or diarrhea

PLANTS

There are thousands of poisonous plants. The poison control center should always be called if any plant is ingested.
Mushrooms—Symptoms vary, and may be delayed. Always call the poison center if it is thought a poisonous mushroom may have been eaten.

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Unknown poisons: Call the poison center or doctor immediately.

Teachers may want to direct students to find the appropriate responses to the questions listed below. The responses below are for the Sacramento community. Responses may vary from one community to another.

WHAT DO I DO NOW?
(A Sacramento Citizen's Response to "Toxic" Incidents*)

PESTICIDES

1. While I was jogging, I was hit by a crop duster's spray. How can I find out what chemical was being sprayed?

   If possible, take the name of the crop duster. Remember the time, date and location of the incident. This will assist in determining the chemicals that were sprayed on you. If the chemical is for restricted use, call the County Agricultural Commissioner at 366-2003. They will be able to assist you. If the chemical was for non-restricted use, you must contact the crop duster for information on what was sprayed. If possible, keep a sample of the pesticide that was sprayed on you. It, also, can be used to determine what was sprayed.

2. I have a lot of old pesticide products stored in the garage and some are partially full. Who can I call for information on how to dispose of them?

   A Hazardous Waste Disposal Firm, Hazardous Waste Transfer Station, or Hazardous Waste Consulting Firm may be able to help you. In Sacramento, you can also use the household hazardous waste collection program when it is in operation. Following the project, try calling the County Agricultural Commissioner at 366-2003 (pesticides), County Environmental Health Department, 366-2109, or Golden Empire Health Planning Center at 731-5050.

3. The County is spraying the trees in front of my house with some pesticide and I want to know what is being used. I would also like to know what is being sprayed on school grounds and recreation areas. Who do I call?

   Contact the County Agricultural Commissioner at 366-2003 if the pesticide is for restricted use. For non-restricted use of pesticides, contact the Department of Parks and Recreation Tree Services at 449-5304.

4. I found an old pesticide drum buried in my backyard. It seems pretty full. Who do I call?

   The primary person to contact is the County Agricultural Commissioner at 366-2003. Otherwise you can contact the County Environmental Health Department at 366-2109. For a fee, a private hazardous waste management facility will identify and dispose of the product for you.

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* Similar organizations responding to toxic incidents may serve other communities, statewide and nationally.

5. The farmers around my area do agricultural burning and the smoke makes me miserable. Where can I call to complain and who can give me information on the health effects of rice burning ?

At the time of the violation, contact the County Agricultural Commissioner at 366-2003. If the smoke travels or crosses the river, call the Air Pollution Control District at 366-2107. For health information call the American Lung Association at 444-LUNG. (You can also call the Air Resources Board Complaint section at 322-7664.)

6. I had my home professionally fumigated and now I feel nauseous and dizzy. I think the exterminator used too much pesticide. Who could I call about this?

Report the incident to the Department of Consumer Affairs -- Structural Pest Control Board at 924-2291.

7. My land is being sprayed with 2,4-D. I left the city to avoid pollution. Where do I call to complain?

For complaints call the Counmty Agricultrual Commissioner at 366-2003. If the incident involves spraying by the U.S. Forestry Department, you can contact them. For the El Dorado National Forest, call 626-1551. In Tahoe, call 265-4531 and also, contact a community group working on the "spray" issue.

SPILLS

1. Driving home late one night, I spotted a large truck emptying "something" into a storm drain. What should I do?

Report "midnight dumpers" to the County Sheriff. If the dumper's truck has a name on it, take down the name and license plate number.

It is also important to call the hotline at the California Department of Health Services. The number is 1-800-25-TOXIC. This is the number for an informant's reward program and the person may remain anonymous. Use this number any time you spot an activity that involves mismanagement of toxic substances or hazardous waste. The number is open 24 hours although you may receive a recording after normal business hours.

You can also call the CAL TIP line at 1-800-952-5400. This program is administered by the Department of Fish and Game to increase consumer involvement. If the dumper is prosecuted and fined, the consumer may receive a reward up to $1,000. After 5:00 p.m. you will receive a recording with instructions on what to do. You may remain anonymous if your wish.

2. If I spot a toxic spill on a highway or road, who do I call?

For toxic spills on a highway or road, dial 911. You can also contact the California Highway Patrol: North Sacramento call 920-6444; South Sacramento call 445-2113.

On a county road, contact the County Fire Department at 969-6145 and the County Sheriff at 440-7288. In the city contact the City Fire Department at 449-5266. All emergencies can be handled through 911.

3. A transformer in my backyard is leaking. How can I find out if it contains PCBs?

If you live in the SMUD service area, call the consumer services division of SMUD at 452-3211. If you live outside of the SMUD service area, call your local PG&E customer services number. Most of the utilities have phase-out programs to replace the transformers containing PCBs.

DISPOSAL

1. I have some miscellaneous products to be disposed. Some are toxic while others are acids and corrosives. Who should I call?

While it is operating, use the household hazardous waste collection program. Call Golden Empire Health Planning Center at 731-5050 or the County Environmental Health Department at 366-2109 for information on the collection site service. Otherwise, call a Hazardous Waste Disposal Firm, Hazardous Waste Transfer Station, or Hazardous Waste Consulting Firm to assist you.

2. I changed the oil in my car and I need to know where I can dispose of it. Who should I call?

Call the State Solid Waste Management Board for service stations who accept waste oil, free of charge. The Board's toll-free number is 1-800-952-5545. They can also give you information on other recycling programs such as paper, glass, etc.

3. I have some old ammunition that I no longer want. Where can I get rid of it?

Call the County Sheriff's office at 440-5115 or bring it to one of their stations at 711 G Street, 5510 Garfield, or 12450 Bruceville Road in Elk Grove.

The City Police will also accept ammunition at 625 H Street.

4. I changed the antifreeze in my car. Now what do I do with it?

In Sacramento, very small amounts of antifreeze (1-2 gallons) can be poured down a drain IF the drain leads to a sewage treatment plant. Communities in other parts of the State may offer different advice. As a rule, however, toxic substances should not be poured down a drain.

Toxic substances should NOT be disposed down a storm drain or in a septic system.

HEALTH EFFECTS

1. I have been exposed to a toxic chemical and I want to know the potential health effects. Who can I call?

   For information on acute health effects call the UCD Regional Poison Control center at 453-3692. For information on the acute and chronic effects of pesticides and other toxic chemicals, contact the Toxic Information Center at the San Francisco Regional Poison Control Center. Their number is 1-800-233-3360. For information on the acute and chronic effects of pesticides, call the Texas Pesticide Hazard Assessment Project at 1-800-858-7378 (toll-free).

2. I'm pregnant and worry about the drugs my doctor is giving me. Where can I find out about them?

   Contact the California Teratogen Registry. The toll-free number is 1-800-532-3749, or write to the Department of Pediatrics, University of California, San Diego, La Jolla, CA 92093 for complete informaiton on the effects of chemicals on pregnant women.

3. I am an avid hobbiest. How can I determine if the materials I use are toxic?

   Contact the Center for Occupational Hazards, 5 Beekman Street, New York, NY 10038, (212)227-6220 for information on chemicals associated with arts and crafts. The California Public Interest Research Group is working on identifying toxic chemicals in art supplies. For more information, call CALPIRG's legislative office at 448-4516.

4. Many of the children born in my community have had some sort of birth defect. I'd like to report this to someone. Who can I call?

   Contact the Birth Defects Monitoring Program, DHS 2151 Berkeley Way, Berkeley, CA 94704, (415)540-3092.

MISCELLANEOUS

1. I am concerned about a hazardous waste management facility being located in my area. Who do I call for information?

   In the Sacramento area, call the Department of Health Services, Northern California Section, 739-3145. This department is in charge of hazardous waste management permits. (For the Fresno area, call the Northern California subsection at (209)445-5938. For the Northern Coast area call (415)540-2043 and in L.A. call (213)620-2380.)

2. I went hiking and saw some dead fish floating on oily water with dead vegetation on the bank. Who could I report this to?

   Call the toll-free CALTIP Hotline at 1-800-952-5400. This service is open 24 hours. After 5 p.m. leave a message and a warden will contact you. You may remain anonymous. If the violator is prosecuted you may

receive a reward. Also call the hotline of the Department of Health Services at 1-800-25-TOXIC.

3. The water from my faucet looks and tastes funny. Who could I report this to?

   If you would like your water tested and you live in the Sacramento city limits, including North Sacramento, contact the American River treatment laboratory at 449-5366. If you live outside the city limits, contact the company that serves your area. If you have a private well you must pay a private laboratory to do the testing. Those with wells who live around McClellan Air Force Base should contact the State Water Resources Board, Water Quality Division, at 323-7458 and the County Department of Health Services at 366-2101 to see if they are eligible for free water testing.

4. I live near a business and wonder what chemicals are being used, stored and discharged. How can I get this information?

   This information is available in cities/counties that have passed community right-to-know ordinances. In Sacramento we have such an ordinance. In the city, contact the city fire department at 449-5266.

   For businesses in county limits, contact the County Fire Department at 366-1494. A copy of all chemicals used, stored and discharged by the business is available at the departments for a nominal charge.

5. My child got into a cupboard and may have eaten some rat poison. What should I do?

   For emergency advice, call the UCD Regional Poison Control Center at 453-3692. They will give you appropriate first aid information.

6. I just moved into a newly painted house and bought new rugs and furniture. The fumes are strong and I have been feeling really dizzy. My home is also insulated with urea formaldehyde foam. Is this the problem?

   Call the Indoor Air Quality Program, Air and Industrial Hygiene Laboratory - DHS, 2151 Berkeley Way, Berkeley, CA 94704, (415)540-2469. You may also call the UCD Regional Poison Control Center at 453-3692 to determine if you are in immediate danger from the exposure. (The U.C.D. Center generally does not have information on the long term effects of chemicals.) You may also want to have your indoor air tested for chemical contaminants. Look in the yellow pages under Safety Consultants and Equipment.

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